FORESIGHT SCENARIO BUILDING AND MULTI-CRITERIA APPRAISAL TO INFORM SUSTAINABLE DEVELOPMENT IN SMALL ISLANDS

A thesis submitted for the degree of
Doctor of Philosophy
by

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To my parents, my sister and my brother.

"Too much sanity may be madness. And maddest of all,
to see life as it is and not as it should be."
Don Quixote, The Man of La Mancha, adapted from Cervantes (Wasserman, 1959)

Abstract

This thesis is the result of applying a novel methodology which I labelled 'participative foresight scenario mapping'. This methodology couples participatory methods for building holistic foresight scenarios for sustainable development in Flores Island (Azores, Portugal) with a multi-criteria appraisal method, Multi-criteria mapping (Stirling, 1997), to assess these scenarios alongside five sector based regional scenarios (*Secretaria Regional do Ambiente e do Mar*, 2006). The main research question was to reflect on how small isolated societies, which have a distant relation with strategic decision-making centres, can define their transitions to sustainability. Small islands represent interesting cases to reflect on sustainability, these small territories distant from main decision-making centres challenge decision-making and require a consideration of the issues of scale. Islands have also been seen as small, manageable models of the world, providing the opportunity to explore innovative solutions at a scale that allows inclusion of as many different factors as possible. Small islands' populations are especially linked to their island and they develop, by the effects of isolation, a strong particular relation to the place, the role of identity is then crucial in fostering sustainable practices adapted to the island.

A succession of individual scoping interviews with twenty four regional and local decision-makers and key informants and seven focus groups with a total of thirty local lay citizens gave me the opportunity to develop two differentiated multi-sector scenarios for Flores Island which were identified as Standard and Balanced development scenarios. The Balanced development scenario reflects a desire to develop an island that bases its economy on greater self-sufficiency for agricultural products, quality and certified products, and natural conservation and valorisation. The Standard development scenario is based on economic growth through tourism and primary sector intensification, and public investment in infrastructures; this scenario can be summarized as the continuation of the actual model of development. The appraisal of both holistic narratives allows in depth exploration of the complex issues related to sustainability, such as the preference between weak and strong sustainability, that otherwise would have been too difficult to assess by such a variety of research participants. Working with holistic scenarios raised the limits of the capacity to show proficiency in a wide variety of fields.

The research demonstrated the feasibility of applying the multi-criteria mapping method to support the analysis of holistic non-technical scenarios. The combination of qualitative and quantitative data brought depth to the analysis and improved the understanding of the desired sustainable futures in islands. But the quantitative appraisal was overshadowed by strong uncertainties that made difficult the identification of a best scenario. Uncertainty was explained by the risks inherent to the scenarios, the limited expertise in all the criteria, the complexity of the holistic scenarios, the time horizon (20 years), doubts on the effective implementation of the chosen scenario, and the existence of potentially disrupting external factors. The process was also the opportunity to understand the role that social capital might play in the transition to the desired future for this island. It is shown in the thesis that a successful transition to sustainable development can only be reached if the objectives are understood and shared by the population.

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Ethics

All research participants filled an Ethic form validated by Brunel Business School (Appendix 1). In the form, the purpose of the research, the goal of the interview and their rights as participants were described. The participation implications and the confidentiality policy were also explained. When an individual participant is referred in this thesis a pseudonym is used, assuring the participant's anonymity.

Acknowledgements

Completing this thesis has been a long journey which was accomplished with the help and support of a number of people. Without their help this project would have not been the same.

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Acronyms

BAP	Biodiversity Action Plan
BDS	Balanced development scenario
BPOA	Barbados program of action
BR	Biosphere Reserve (UNESCO Biosphere Reserve)
DEQ	*Desenvolvimento Equilibrado* (BDS in English acronyms)
DES	*Desenvolvimento Standard* (SDS in English acronyms)
ELECTRE	*ELimination Et Choix Traduisant la REalité* (ELimination and Choice Expressing REality)
EPA	Environmental Protection Agency
EVALSED	EVALuation of Socio-Economic Development
GATNER	Department of Nature Tourism and Rural Areas Support
IAEA	International Atomic Energy Agency
ICLEI	International Council for Local Environmental Initiatives
ISTOS	Innovation for Sustainable TOurism and Services
IUCN	International Union for Conservation of Nature
LA21	Local Agenda 21
LEAP	Local Environmental Agencies Plan
LITMUS	Local Indicators To Measure Urban Sustainability
MCM	Multi-criteria Mapping
MDG	Millennium Development Goals
MIRAB	MIgration, Remittances, Aid and Bureaucracy
NAIADE	Novel Approach to Imprecise Assessment and Decision Environments
PASTILLE	Promoting Action for Sustainability Through the use of Indicators as the Local Level in Europe
PDM	*Plano Director Municipal*, County Major Plan
PEOT	*Planos Especiais de Ordenamento do Território*, Land Management Special Plans
PMOT	*Plano Municipal de Ordenamento do Território*, Municipal Plans for Land Management
POOC	*Plano de Ordenamento da Orla Costeira*, Coast Line Management Plan

POTRAA	*Plano de Ordenamento do Turismo na Região Autónoma dos Açores*, Tourism Plan for the Azorean Region
PReDSA	*Perspectivas para a sustentabilidade na Região Autónoma dos Açores*, Regional Plan for the Sustainable Development of the Azores
PROMETHEE	Preference Ranking Organisation METHod for Enrichment Evaluations
PROTA	*Plano Regional de Ordenamento do Território*, Regional Territory Planning for the Azorean Region
SDS	Standard development scenario
SIDS	Small Island Developing States
SMCE	Social Multi-criteria Evaluation
SNIJ	Sub-National Island Jurisdictions
SREA	Azorean Regional Statistics Services
SRAM	Regional Secretary For The Environment And The Sea
TIES	The International Ecotourism Society
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WCED	World Commission on Environment and Development
WCPA	World Commission on Protected Areas
WTO	World Tourism Organisation

Publications and conferences

Related to the present research:

Benedicto, J. (2014) 'Identity and decision-making for sustainability in the context of small islands' *Journal of Integrated Coastal Zone Management, 14(2) pp.* 199-213

Benedicto, J. (2013) '*Participative foresight scenario mapping': informing small islands' sustainable futures*', presentation for the workshop 'Definição, Planeamento e Gestão de Áreas Protegidas em Pequenas Ilhas - Contributos do Projecto SMARTPARKS' held in Universidade dos Açores, Ponta Delgada, Portugal, 5-6 October 2013

Benedicto, J., Eames, M. and Buckingham, S. (2010) 'Participative scenario building and multi-criteria appraisal in an Azorean Island', presentation for the RGS-IBG Annual International Conference: held in RGS-IBG, London, England, 1-3 September 2010.

Benedicto, J., Buckingham, S. and Eames, M. (2009) 'Flores, foresight and sustainable economic development', proceeding of the 3rd APDR workshop on Tourism and sustainability: held in Ponta Delgada, University of the Azores, Portugal, 27 April 2009.

Other research:

Benedicto, J. (2013) *Avaliação socioeconómica do projecto LIFE "Ilhas santuário para as Aves Marinhas" na ilha do Corvo e na Região Autónoma dos Açores*. Available at: https://docs.google.com/file/d/0B7oQsdlYzifdVHMzWFF3eTJUbmc/edit?pli=1

D'Amato, D., Kettunen, M., Cruz, A., Benedicto, J. and Gil, A. (2013) 'Annex 1. Scoping Assessments of Benefits Provided by Protected Areas – an Example of Application' in: Kettunen, M. and ten Brink, P. (eds) *Social and Economic Benefits of Protected Areas – An assessment guide.* Routledge.

Cruz, A, Benedicto, J. and Gil, A. (2011) 'Socio-economic Benefits of Natura2000 in Azores Islands - a Case Study approach on the ecosystem services provided by a Special Protected Area'. *Journal of Coastal Research*, SI 64, pp.1955-1959. Szczecin, Poland, ISSN 0749-0208

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Benedicto Royuela, J., de la Cruz, A., Rocha, S. and Domingos, J. (2008) *Avaliação da sensibilidade da população em geral e da Aministração relativamente á problemática do Priolo e da vetação Nativa.* Sociedade Portuguesa para o Estudo das Aves, Lisboa (relatório não publicado).

Chapter 1: Introduction

Fajã de Lopo Vaz (Lajes das Flores).

1 Introduction

1.1 The beginning…

I first visited the Azores Islands in 2006 to work as an economist on the 'LIFE Priolo' project[1]. The objective of this project was to study the Azorean Bullfinch (*Pyrrhula murina*), endemic bird species from the Eastern areas of São Miguel Island, and to restore the bird's native habitat, the Laurel forest. This 2.7 million Euro project had an important socio-economic impact in these rural areas in terms of employment creation, direct and indirect wealth creation, and international visibility. From October 2006 to March 2008 I participated in the study of the socio-economic impact of the project on São Miguel Island (Cruz *et al*, 2008; Benedicto *et al*, 2008; Cruz and Benedicto, 2009; Cruz *et al*, 2011; and to a lesser extent Gil *et al*, 2011). In addition to the professional and personal experience, the project was an opportunity to become familiarised with Azorean society and to establish some contacts in the regional institutions, which proved to be helpful in the research now presented.

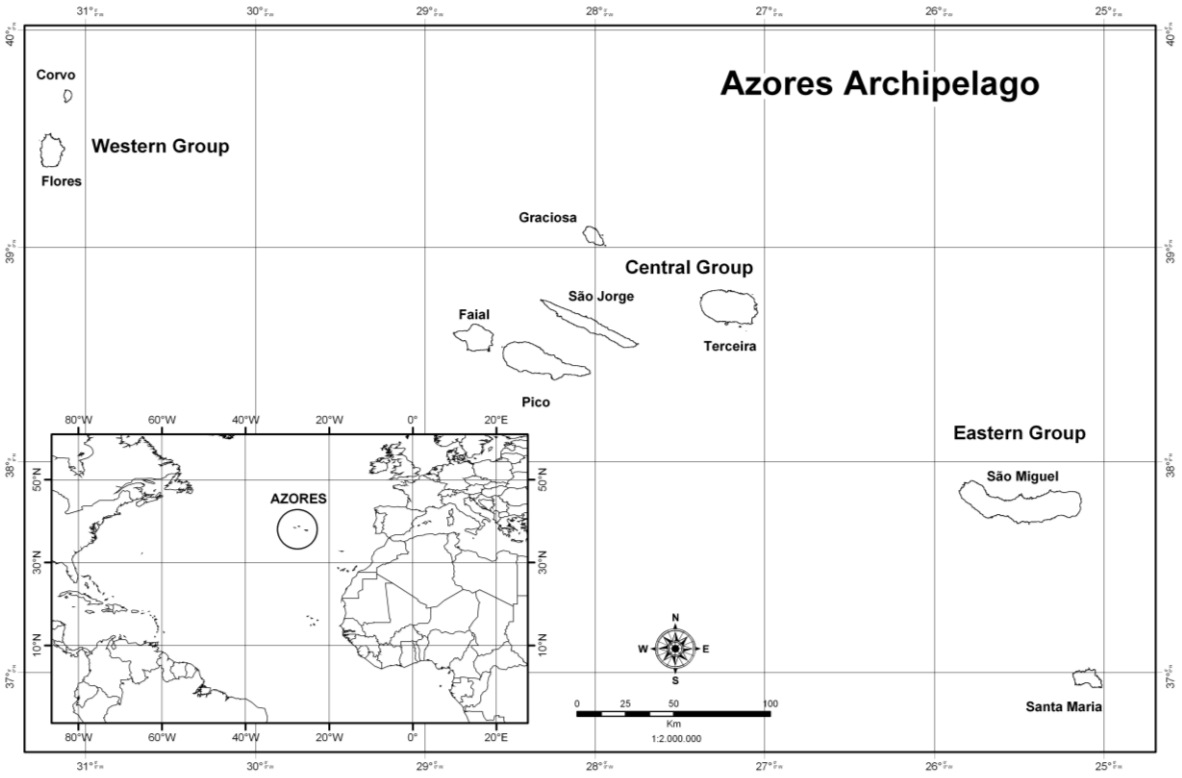
Due to their relevance in policy making for sustainable development, the first points of interest for my thesis were multi-criteria appraisal (MCA), local participation, and natural area management. Rapidly, a decision was taken to include an MCA method into a participative process whereby local and regional stakeholders could reflect on the future management and use of the protected area. At the beginning of the PhD, I identified a series of options to see which regions might have an institutional interest in my project. Two key Azorean secretariats, the Regional Secretary of the Environment and the Sea (*SRAM* in its Portuguese acronym) and the Regional Secretary of Economy (Department of Nature Tourism and Rural Areas Support), responded positively to the research proposal, and agreed to participate in the project. This institutional 'umbrella' gave credibility to

[1] LIFE NAT/P/000013, LIFE, the French acronym for the Financial Instrument for the Environment.

the project and helped in making contact with additional stakeholders in the region.

A further reason for using the Azores as a case study was that the *SRAM* had prepared a report on perspectives for sustainable development based partly on foresight exercises (scenarios: *Hotelândia*, *Lactogenia*, *Ecotopia*, *Sociopolis* and *Infocracia*) (conf. Chapter 3: Section 3.3). This was an effective complement and point of reference for my research and the methodology I chose. The initial idea was to work on protected areas, but the existence of very small islands in the Azores made possible the prospect of working on the totality of an island territory (Flores Island, see Figure 1.1). It also influenced the focus of the research as it was going to deal with decision-making for sustainability in the context of small islands.

Figure 1.1: The Azores (source: University of the Azores' Geographic Information and Land Planning Research Centre (2010))



1.2 Research project, frame and methodology

Deciding on the development of a territory from a holistic point of view requires analytical tools that can cope with such inherent diversity, high levels of complexity and the inclusion of multiple characteristics. The failure of conventional analytical techniques to assess complex decision-making cases has led to the emergence of 'post-normal sciences' (Funtowicz and Ravetz, 1991, 1994 and 2003; Burgess, 2000); ecological economics is one of these, as Funtowicz and Ravetz state:

> "The task is to begin the construction of a system of concepts and practices for economics in which all these complementary perspectives can be articulated in a rational dialogue, one in which ethical commitments can be articulated. This can be accomplished in an ecological economics which is a post-normal science."
>
> Funtowicz and Ravetz, 1994, p.199

The present research follows these precepts, specifically those of ecological economics: studying an area's sustainable development in a participative way requires the consideration of a wide range of viewpoints and the analysis of multiple criteria. The main research question was to reflect on how small, isolated societies, which have a distant relation with strategic decision-making centres, can define their transition to sustainability, and what their specificities were. Given this context and the broader research question two aims for the research were set (the objectives associated with these aims are presented in Chapter 3: Section 3.6):

Aim 1: To inform the sustainable development of a small island by means of foresight scenarios developed and appraised in a participative way.

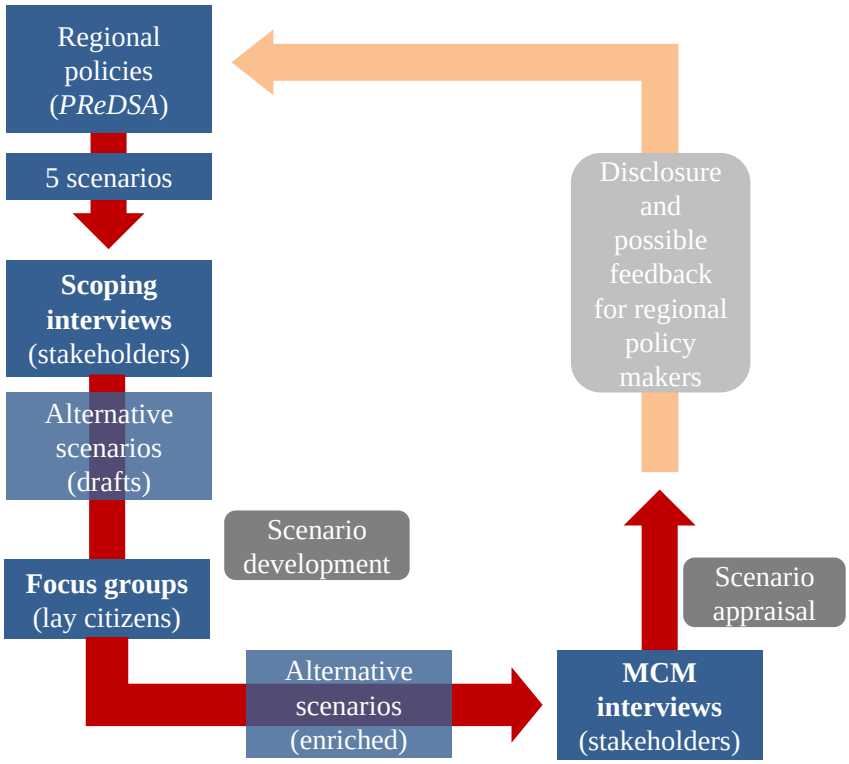
Aim 2: To adapt a multi-criteria appraisal method within a participative process to create a novel participative methodology, critically apply the methodology, and contribute to debates on participatory planning and appraisal of foresight scenarios for sustainable development.

To answer to the research question and these aims an innovative participative multi-criteria appraisal methodology was developed. In the context of the thesis, local and regional stakeholders were asked to engage in a reflexive process in order to plan for sustainable development on Flores Island. The project facilitated gaining deep insights into local community visions for the future, knowing how it fitted into existing sustainable development plans. The methodology was also designed to enable knowledge sharing among the research participants. The methodology was labelled 'participative foresight scenario mapping' and was divided into two main phases now presented (the methodology is developed in depth in Chapter 4).

The first stage in the participative foresight scenario mapping methodology involved, in two distinct steps, stakeholders, decision-makers, key informants and lay citizens in the elaboration of foresight scenarios. While initial scoping interviews were held with stakeholders (this category of participants incorporates decision-makers and key informants), focus group interviews (conf. Chapter 2: Section 2.2.2.3) were conducted with island inhabitants (referred to in the thesis as lay citizens or participants), who were *a priori* not actively involved in any institution or who were not influential socio-economic actors. The individual interviews with stakeholders and the focus groups generated two alternative development scenarios for the island: Standard and Balanced development scenarios (developed in Chapters 4 and 5).

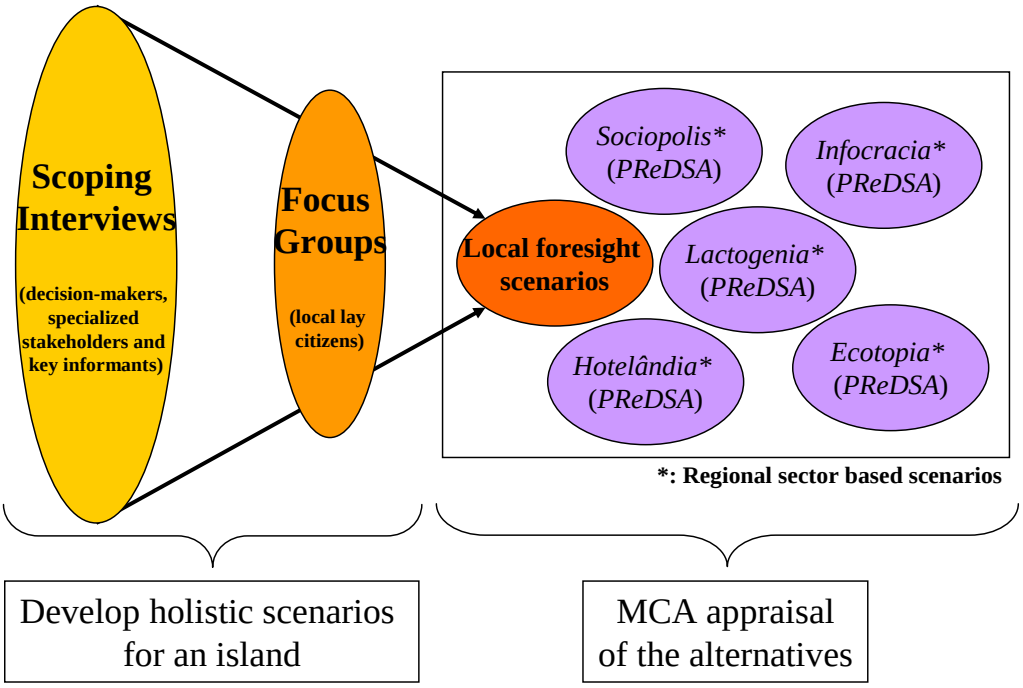
The second stage of the methodology was a multi-criteria appraisal exercise. This was undertaken by adapting in a novel way a multi-criteria mapping (MCM) tool originally developed by Stirling (1997) (conf. Chapter 2: Section 2.4.1.5), which was undertaken by stakeholders, permitting them to contrast these visions with the future sector-based scenarios proposed by the regional institutions in the *PReDSA* report (*Secretaria Regional do Ambiente e do Mar*, 2006) (conf. Chapter 3: Section 3.3). Figure 1.2 schematises all the stages of the research process and shows how it was a complementary exercise that could inform regional reports and policies (this figure is completed in Chapter 4: Figure 4.8).

Figure 1.2: Research overview



The process proposed to focus on a single island instead of a regional perspective. The objective of this was to avoid decisions that are not adapted to local specificities. The sequence of scoping interviews and focus groups was the opportunity to produce final versions of the foresight scenarios that are realistic and consistent with local perspectives. Initially, regional and local decision-makers, specialized stakeholders and key informants developed in the scoping interviews their point of view on the future of the island. In the second stage local lay citizens were asked to value the draft scenarios. Therefore they could comment and contribute to the final foresight scenarios; assuring that they were viable for the island and congruent with local expectations. The final versions of the local scenarios were finally appraised alongside existing regional foresight scenarios (*SRAM*, 2006). The objective was to assess in a systematic manner the preferability of the local scenarios in comparison to the regional ones. Figure 1.3 schematizes this process.

Figure 1.3: Local foresight scenarios
and regional sector based scenarios



The project was designed to be as multidisciplinary as possible, incorporating representatives of different sectors, including all the key components of the island's development. Following sustainable development precepts (developed in Chapter 2: Section 2.2), social, economic and environmental issues were taken in consideration. By including local inhabitants in the process, "socially robust knowledge" (Gibbons, 1999) generation was expected. Engagement of the local population is one of the conditions for sustainability (*e.g.* UNCED, 1992; Harrison *et al*, 1998; Agyeman and Angus, 2002; Selman, 2000; Wells and McShane, 2004) (conf. Chapter 2: Section 2.2.2). This participation by lay citizens brought social significance to the project. Focus group concerns were transmitted to the stakeholders, in the form of final versions of the development scenarios, and the pre-selection of the appraisal criteria. As the outcomes of the focus groups were studied by stakeholders in the multi-criteria appraisal phase of the research, a relationship between specific local expectations was created.

The use of the multi-criteria appraisal method was positive but presented a certain number of limitations (these were related to interviewees' proficiency and

uncertainty, as developed in Chapters 4 and 5). Potential improvements to the methodology were also identified, but these were outweighed by a number of advantages. The project succeeded in including a wide variety of participants, and the appraisal method used allowed a combination and visualisation of different perspectives. The methodology also fostered information sharing and participants' acceptance of the process and its results (as demonstrated in Chapter 5). It also succeeded in identifying threats, and enabled a sound analysis of the opportunities and challenges in the development of small islands. The appraisal revealed a rather high level of sustainability and environmental awareness among the research participants (conf. Chapter 6), and an interesting convergence of different perspectives on the scenarios indicating the existence of a basis for consensus (conf. Chapter 5). This research showed that locals' identification with their island is an important factor for the transition to sustainability, and it also provided an opportunity to inform potential strategies for this transition from both specialist and lay perspectives (conf. Chapter 6).

1.3 Why study small island sustainability?

Islands represent interesting specificities (conf. Chapter 2: Section 2.3). Their isolation is often the reason for an important biological endemism (Francisco-Ortega *et al*, 2000; Stattersfield and Capper, 2000), but anthropogenic pressures are identified threats for island ecosystems (Lane, 2006; Lagabrielle *et al*, 2009; Fonseca *et al*, 2011). Furthermore as Kerr (2005) affirms: "islands may appear to be clearly definable units, where all inputs and outputs can be measured, providing a useful 'laboratory' to test theories of sustainable development" (p.504), thus islands are unique but interesting and relevant cases for study. This instrumental understanding of the value of islands as mere guinea pigs reminds of Visvanathan's critique of Bruntland's report vocabulary: "its systems vocabulary does not eliminate the still mechanical mind-set of its experts" (1991, p.382), and it gives a vision of the Earth as a soulless resource. The image of the "world in miniature" (mentioned later in this section) is friendlier than the 'laboratory', but it reflects also the potential to produce innovations and knowledge useful in on a

larger scale. Baldacchino (2005) also uses the 'laboratory' metaphor to describe the potential use of islands as subject of study and experimentation. For instance, Easter Island has been used to understand global sustainability challenges and to study Malthusian models (Reuveny and Decker, 2000). As Gagliardi (2009) beautifully explains:

> "islands are models of the world […] The island is a complete and simplified world in which miniaturization has the effect of giving visibility and tractability to relations and processes, so that matters become more manageable and orderable" (p.46)

Gagliardi proposes that islands can be places for experimentation in "territorial governance and new organizational forms" (2009, p.46). For Péron, an island is a "world in miniature" (2004, p.338). Kelman and Lewis (2005) also agree on the utility of studying islands to analyse vulnerability[2] in continental areas:

> "The compactness and smallness of islands implies that a reasonable grasp of the entire vulnerable[3] ecology could be attained. Meaningful analyses could be completed on the entire system providing lessons that could be scaled-up to non-islands" (p.8)

On the risks of categorising islands as a "specific genre, type or trope", Baldacchino (2005) declares that it would simplify their variety "which is one of the foremost characteristics of islands as laboratories for innovation, both in human and biotic terms" (p.247). Islands have inspired scientists in their quest of knowledge, as they "inspire(s) the desire for comprehensiveness, the myth of total knowledgability" (Péron, 2004, p.337); maybe this is why More's Utopia is an island.

But small island management remains a challenge. This is due to small island characteristics such as isolation, size, "closed systems" and social structures making decision-making an even more difficult exercise (Calado *et al*, 2007, p.126). Therefore studying islands provides the opportunity to test models and methodologies on a manageable scale, but it remains a challenging exercise. The instructions on economic activity within bioregions given by Sale in 1983 ("minimize resource use, emphasize conservation and recycling, avoid pollution and waste"), are particularly relevant for sustainability in small islands (conf.

[2] Defined by the authors as "the potential for damage and harm to occur" p.4.
[3] Vulnerability in the original text.

Chapter 2: Section 2.3.1). Eco-localists use the bioregion concept, or the local eco-system, (Berg and Dasmann, 1977; Sale, 1983 and 2000) as a reference for economies and businesses' appropriate scale (Curtis, 2003) (see Chapter 2: Section 2.3.1.2). Therefore islands require a correct assessment of the scale of a project to reduce any negative impact on the local eco-systems while assuring their economic sustainability. Working on a small island permitted testing the innovative methodology, participative foresight scenario mapping, for the whole territory, proposing integrated holistic scenarios. It also raised issues and potential strategies consistent with other island cases, such as small island developing states (SIDS) or sub-national island jurisdictions (SNIJ) (conf. Chapter 2: Section 2.3.2).

1.3.1 The Azores and Flores Island

The information on Flores Island and the Azores presented here is developed in depth in Chapter 3. The Azores are a good European example of issues related with nature conservation, and the challenges inherent in their socio-economic integration. Their relatively recent (re)discovery[4] in the 15th century and their low population density have placed the Archipelago in a privileged situation for nature conservation - numerous Natura2000 sites and three islands declared UNESCO Biosphere Reserves (Graciosa, Corvo and Flores Islands) bear witness to the value and interest of the landscape and presence of endemism -.

These islands have proven to be good cases for research on transition to sustainability. For instance, the Massachusetts Institute of Technology is leading a project, "which will investigate new methodologies to identify cost-effective sustainable energy solutions and options utilising natural resources at several island sites" (MIT Portugal, 2008; Green Island Azores, 2012). Initially centred on Flores and São Miguel Islands, this international project seeks to study the potential future sustainable use of renewable energy in the archipelago. In the context of this project a wide variety of areas has been studied: energy networks, energy consumption and production trends, as well as potential sources of

[4] It is said that the archipelago was known by the Phoenicians, the Carthaginians, the Vikings and Arabic merchants before the Portuguese discovery and definitive settlement (Babcock, 1918).

renewable energy and mobility. Another recent project, SMARTPARKS[5] (Fonseca *et al*, 2011), aims at studying the integrated management of protected areas in small islands, considering the islands' ecosystem and improving the management traditional protected areas. Moreover, the Azorean government has proven to be aware of the natural value of the archipelago for tourism and the role natural heritage has in supporting the well-being of its inhabitants (conf. Chapter 3: Section 3.3).

In Flores Island, a low population density (26.7 inhab./km^2 in 2011) associated with its mountainous geography has been an opportunity for the conservation of high-altitude inland natural habitats. Moreover, the island's small territory, population and market size, and the low diversity of primary production, allow a unique opportunity for exploring the novel approaches proposed in this project. Flores Island's establishment as a UNESCO Biosphere Reserve in May 2009 and the growth of ecotourism implied potential challenges but also opportunities for the community.

1.4 Structure of the thesis

The thesis is composed of seven chapters. The literature review chapter (Chapter 2: 'Decision-making for sustainability in the context of islands') provides the opportunity to analyse themes related to broad sustainable development concepts, public participation, focus groups, and the role of foresight scenarios to reflect on sustainable futures (Section 2.2.). In addition to this, the specific challenges concerning small island development are analysed in depth (Section 2.3). Small islands are presented as territories in which specificities are relevant to an understanding of bigger territories. Key elements of sustainability on islands are also developed, as well as the different typologies of islands and the potential role that identity can play in decision-making for sustainability on islands. Finally,

[5] This project takes place on Pico Island and aims at integrating the management of small islands protected areas in wider management instruments. The methodology proposed in the SMARTPARKS project aims at being applicable in Ultraperipheral European Regions and small island developing states. http://www.projectosmartparks.com

Section 2.4 of the literature review analyses the most recent multi-criteria appraisal methods and their relevance for the study of holistic scenarios for sustainability.

Flores Island's main characteristics are analysed in Chapter 3 ('Background of case study area: Flores Island') to understand its crucial challenges for sustainable development and its relevance to the present research. This island, on the periphery of a European outermost region, has been experiencing depopulation since the 1950s, but its natural heritage and its isolation have great potential for fostering sustainable behaviours and sustainable economic activities.

The novel methodology of participative foresight scenario mapping is presented in Chapter 4 ('Methodology') as a novel tool designed to explore local strategies for sustainability from a holistic perspective. This methodology combines the development of foresight scenarios with multi-criteria appraisal in a participative manner.

The application of this novel methodology is evaluated in Chapter 5 ('Critical reflection on participative foresight scenario mapping methodology'). The fieldwork took place from April to December 2009 and was an opportunity to test the validity of the proposed methodology to appraise, in a participative way, non-technical holistic scenarios for a small island's sustainability. In this chapter it is shown that multi-criteria mapping can be a useful tool to explore such scenarios; it did, however, present some procedural limitations, such as the challenge of participants' expertise and the impact of uncertainty in the assessment.

Chapter 6 ('Contributions to sustainability in small islands') presents the findings on Flores Island's alternatives for sustainability. The appraisal of the scenarios was an intensive exercise that provided information on a rich variety of criteria (25). This chapter undertakes an analysis of themes that arose from the process and can be considered to be crucial in sustainability in small islands (Section 6.2). These themes are the relation of the concepts of 'heaven' and utopia with islands, the islanders' awareness of the limits to growth and islands' environmental

fragility, the role that public participation can play in these contexts, the necessity to diversify the local economy as a means of increasing islands' economic resilience, to improve the quality rather than the quantity of local production and to increase islands' self-sufficiency. Finally tourism, considered as pivotal in small island development, is also discussed.

Chapter 7 ('Conclusion') concludes the thesis providing a synthesis of the knowledge acquired on sustainable development in small islands, a reflection on the methodological contributions and recommendations.

Chapter 2: Decision-making for sustainability in the context of islands

Harbour with new marina (Lajes das Flores).

2 Decision-making for sustainability in the context of islands

2.1 Introduction

The key to sustainability is a fine balance between the economy, society and the environment (the sustainable development concept will be analysed in Section 2.2). In this context, small islands (conf. Section 2.3) represent relevant case studies to examine the challenges of sustainable development. While, in general terms, sustainability issues are the same as in continents, or bigger islands (such as Japan, Madagascar or Java), they present characteristics that condition their transition to sustainability. Moreover, being surrounded by water, islands illustrate in a tangible way the ecological economist's vision of the world: that island societies must develop themselves within a closed environment (the island itself) that conditions economic activities (without considering external support). Therefore islands are powerful (and real) images which illustrate the limits of our planet and its "finite natural ecosystem" (Daly, 1991, p.256), and the consequent inevitable barriers to unlimited economic growth. On small islands resources are limited (Briguglio, 1995; Campling, 2006), and the effect of human activity on the local environment is much more directly observable (Depraetere, 2008). In compensation their small size enables the intellectual exercise of considering an integrated vision of the entire territory (Kelman and Lewis, 2005; Gagliardi, 2009). But even though islands can be seen as small models of the world, this does not prevent sustainable development from being a contested concept in which consensual policies are challenging and complex to achieve (Section 2.2.1).

The UN placed sustainable development in the front line in 1992 with the UN Conference on Environment and Development (also known as the Rio Conference) that produced Agenda 21 and Local Agenda 21 (LA21) (Section 2.2.1.2). Environmental sustainability is also one of the Millennium Development Goals (MDG) (2000). The 7th goal of the MDG includes the integration of

sustainability objectives into policies, biodiversity concerns, water and sanitation access, and improvement in the quality of life of the most deprived population in urban areas ("improvement in the lives of at least 100 million slum dwellers").

Agenda 21 identified small island developing States (SIDS) as areas of main concern that suffer from additional vulnerabilities (conf. section 17.G of Agenda 21). Defining policies in this context requires using appropriate tools that enable the consideration of multiple perspectives, which multi-criteria appraisal (MCA) is able to provide (Section 2.4). But decision-making for sustainability should be undertaken in a participative way (Agenda 21 Chapter 28.2a, 1992; Agyeman and Angus, 2002), including as many voices as possible (Section 2.2.2). One of the limits of LA21 processes has been the difficulty of producing long-term visions that survive short-term political agendas. The development of foresight scenarios is an opportunity to reflect on the future without the disturbances attributable to day-to-day political management (Section 2.2.3). One of the questions of the present thesis is how the MCA of potential sustainable foresight scenarios can inform us on their benefits and limitations in a participative and objective way.

2.2 Sustainable development

2.2.1 Main debates around sustainability

Institutional reflection on sustainable development began in the 1980s with reports from the International Union for Conservation of Nature and the United Nations (IUCN *et al.*, 1980; World Commission on Environment and Development, 1987). The definition given by the World Commission on Environment and Development (WCED) in *Our Common Future* constitutes a benchmark reference. This definition clearly states the requirement of assuring continuity without handicapping the present generation; it also advocates development that ensures that future generations can enjoy the possibility of satisfying their needs. It sets down two fundamental concepts to be considered: human needs, and technological and environmental limits.

Agenda 21 represents the UN's agenda for action in the efforts for sustainability. When 178 member states adopted the Rio Declaration at the Earth Summit in 1992 this augured well for its global success. But 21 years later it is noticeable that its goals have not been entirely fulfilled (UN, 2012), satisfactory achievements have only been realised with the involvement of NGOs and local authorities (Chapters 27 and 28 of Agenda 21, known as LA21), science for sustainable development (Chapter 35), and international tools and agreements for sustainability (Chapters 38 and 39) (UN, 2012). Sections one and two in Agenda 21 (social and economic dimensions, and conservation and management of resources for development) propose a complete set of potential fields of action to implement policies for sustainability. These range from the objective of combating poverty and protection of public health, to conservation of biodiversity and waste management.

The UN itself acknowledges that these sector-oriented recommendations might have helped inform different strategies for sustainability but they have also caused a lack of cohesion in the policies by failing to promote an integrated vision, which is crucial in sustainability (UN, 2012). But Agenda 21 also communicates the need to integrate harmonised economic, social and environmental policies. Chapter 8 of the declaration is fully dedicated to this point:

> "An adjustment or even a fundamental reshaping of decision-making, in the light of country-specific conditions, may be necessary if environment and development is to be put at the centre of economic and political decision-making, in effect achieving a full integration of these factors."
>
> UN, 1992, Chapter 8.2

In 2000, the MDGs re-stated the importance of sustainable development for the following 15 years. The MDGs propose that by 2015 signatory countries should achieve the eight goals (G1: Eradicate extreme poverty and hunger; G2: Achieve universal primary education; G3: Promote gender equality and empower women; G4: Reduce child mortality; G5: Improve maternal health; G6: Combat HIV/AIDS, malaria and other diseases; G7: Ensure environmental sustainability, and; G8: Develop a Global Partnership for Development). The general assessment of the MDGs is one of relative success with only three goals acknowledged to

have been met (UN, 2012). In order to improve them, and to define future objectives the post-2015 agenda is being discussed, the report *Realizing the future we want for all* (2012) proposes a more holistic approach to tackling the development challenges. The new programme should be based on a new global social contract that favours collaboration and partnerships between countries rather than asymmetric north-south relations of donors and beneficiaries (van der Hoeven, 2012), and it should consider a long-term perspective (for instance 25 years) (*Review of the contributions of the MDG Agenda to foster development: Lessons for the post-2015 UN development agenda*) (UN, 2012). The recommendations given to reformulate the MDGs for the post-2015 period correspond partially with two aims of the present research (conf. Chapter 3: Section 3.4): the elaboration of holistic scenarios for a long-term perspective to study the preferred future for small island development.

But, although widely used and strongly supported by the UN and other international institutions, sustainable development is acknowledged to be a controversial term (Jabareen, 2004; Luke, 2005; Counsell and Haughton, 2006; Krueger and Gibbs, 2007; UN, 2010). The concept of sustainable development presupposes being able "to cope with the ecological crisis without affecting existing economic relationships of power" (Baeten, 2000, p.73); enabling nature conservation while preserving the actual neoliberal *status quo* (Krueger and Gibbs, 2007). But Hopwood *et al* (2005) do not believe that limiting the policies to the maintenance of the *status quo* is sufficient to promote global sustainability and they advocate more radical positions for transformation or, if impossible, for less drastic modifications. For instance, Haughton (1999) argues that sustainable development involves deep modifications in human activity: "sustainable development requires not just altering behaviour patterns in relation to the environment but about changing the broader systems that shape human behavior" (p.235). From Hopwood *et al*'s (2005) point of view, sustainability depends simultaneously on the relation to the environment (which is a point commonly agreed) and on just social relations: "social and environmental equity" (p.49).

Redclift (2005) makes two observations on Brundtland's definition: needs change over time, and the existence of a plurality of definitions for needs (following different cultural settings). Therefore building a sustainable society implies numerous and deep modifications that should be thought of in their integrity, and from an integrated point of view, to avoid present and future incompatibilities. Following Baeten's perspective on sustainability presented above, environmental and economic agendas for sustainability are hardly compatible as they have different dynamics: 'immobility' for the environment (conservation/preservation) and 'mobility' (growth or development) for the economic system. Sustainable development is indeed an "oxymoron" (Redclift in reference to Daly, 2005).

One of the main contradictions that can be found in sustainability is the gap between supposedly positive policies for humanity (in the intra- and inter-generational sense) and the relative scarcity of sustainable socio-economic examples. Jackson (2009a and 2009b) promotes the need to change the individuals' vision of development. In fact, the concept of sustainability has gathered many supporters but it has not been systematically applied in practice (Swyngedouw, 2007). Dobson (2007) observes that whereas changes in behaviour /lifestyle are possible, it is probable that only a minority of individuals undertake the required modifications in their daily life, and, green movements willing to promote a "radically ecocentric society" (p.122) will probably face opposition or apathy from larger groups in the community. Kollmus and Agyeman (2002) explain this difficulty with their 'model of pro-environmental behaviour' which presents multiple barriers that prevent individuals from adopting sustainable ways of life. These barriers mainly concern the difficulties in modifying old behaviour patterns, the weakness of internal and external incentives to undertaken these lifestyle modifications, and a lack of environmental awareness. Following Kollmus and Agyeman's model, pro-environmental behaviour is the consequence of a complex combination of internal and external factors; the existence of synergies between them explains stronger pro-environmental positions but the barriers referred to above can discourage individuals. Their model shows that there is not a direct relation between knowledge/awareness and environmental behaviour; social influences are indeed strong factors to consider.

Daly's (1987) reflection on the differentiation between growth and development helps to inform the debate. Daly explains growth as a quantitative matter whereas development is a qualitative improvement or evolution. Whereas growth is limited, development is not: "an economy can therefore develop without growing, just as the planet Earth has developed (evolved) without growing" (Daly, 1987, p.323). Daly advocates a 'steady state economy' instead of a growth economy. A 'steady state economy' maintains the same levels of physical capital, keeps resource extraction at a pace that respects ecosystems' recovery requirements, and acknowledges that the macro-economy is limited by the "finite natural ecosystem" (Daly, 1991, p.256). The limits to economic growth pointed out by Daly are "biophysical" and "ethicosocial" (1987, p.323). Biophysical limits of growth are the finitude of the biosphere, entropy and the complexity of ecological relations. The close relations between these three conditions make it unrealistic to claim that humanity can by-pass biophysical limits. On the other hand, "ethicosocial" limits of growth are the negative impact on future generations' capacity for growth, the destruction or disturbance of natural ecosystems that precipitate the extinction of species, the limits of growth to satisfy human welfare (therefore requiring priorities to be rescaled), and the negative effects of growth on moral capital (Daly, 1987). In addition to these indications on the limits to growth, technical solutions should be aimed at increasing productivity and efficiency of extracted resources (Daly, 1990).

Meadows *et al* (1972) claim that an "equilibrium state" (p.178) can, and should, be reached but this requires aiming actively for this balanced situation from a long term perspective. Like Daly, they argue that technology is necessary to create this equilibrium, but technological solutions alone do not suffice. Decision-makers should support more profound changes in policies and behaviours in order to tackle the more fundamental problem of how to achieve "growth in a finite system" (Meadows *et al*, 1972, p.154). As shown in the "comprehensive technology" vision proposed in the *Limits to growth* (this scenario supposes that technology is the only strategy used to solve sustainability challenges), economic growth would counterbalance the technological benefits in pollution and

efficiency if there is no change in behaviours (Meadows *et al*, 1972, p.140-141; Turner, 2008). The *Limits to growth* have been criticised (Freeman, 1974; Wallich, 1982), but Turner (2008) has proven that the trends proposed in *Limits to Growth* do indeed correspond with historical data (1972-2000 period) acknowledging the relevance of the analysis. Turner's data show that humanity is not on a sustainable path: "the global system is on an unsustainable trajectory unless there is substantial and rapid reduction in consumptive behaviour, in combination with technological progress" (Turner, 2008, p.410). A sustainable society should tend towards an "equilibrium state" (Meadows *et al*, 1972) or "steady state economy" (Daly, 1987) models that respect ecosystems' natural recovery cycles.

Daly's idea of development corresponds to Tim Jackson's "prosperity" (2009a and 2009b). Whereas conventional thinking has associated prosperity with growth, Jackson proposes that prosperity is not solely reached through materialistic means (although he defends the idea that developed countries should support poorer economies to grow). At the local/regional level it can be argued that within a country (developed or not), economically deprived people should be helped to reach a minimum or a satisfactory level of wealth. Jackson's main proposal is that happiness is mostly reached through an "ability to flourish" (2009a, p.16), and this must be done within the limits of our biosphere. Thus flourishing does not mean ignoring material resources but using them within existing "natural bounds" (Jackson, 2009b, p.35). Likewise, Stiglitz *et al* (2009) criticise the overestimation of wealth creation as a measure of well-being and advocate a multi-dimensional definition of well-being. Where Jackson talks about "ability to flourish" Stiglitz *et al* refer to the "capabilities of people":

> "What really matters are the capabilities of people, that is, the extent of their opportunity set and of their freedom to choose among this set, the life they value. The choice of relevant functionings and capabilities for any quality of life measure is a value judgment, rather than a technical exercise."
>
> Stiglitz *et al*, 2009, p.15

Stiglitz *et al*'s emphasis on the capabilities of people is directly related to Sen's work on the "capability approach" (1979 and later in 1990). This notion associates

human well-being with the possibility each individual has to develop their own potential. Sen's contributions have also influenced the MDGs (van der Hoeven, 2012). "Ability to flourish" or "capabilities" notions are particularly relevant in the case of small islands due to the geographic constraints created by their small size and isolation (conf. Section 2.3). Sustainability, as a cultural issue, should be as a priority, a community matter. In that sense, sustainable development must be understood as a "guiding notion" (Loorbach, 2007, p.2) for the transition to a sustainable society rather than as a rigid technical objective. This way sustainable development serves as a reference to be followed in the long-term but also informs policies and projects in the short term.

Three key aspects of policy-making for sustainability are going to be discussed in the following three sections. First, the debate on weak and strong sustainability (Section 2.2.1.1) which underpins most of the decisions concerning environmental issues will be appraised. Then, the importance given to localities and LA21 in policy-making for sustainability and the limits of this approach will be analysed (Section 2.2.1.2). Finally, the role played by indicators of local sustainability will be investigated (Section 2.2.1.3).

2.2.1.1 Weak and strong sustainability

As developed above, sustainable development enables "possible interpretations" (Haughton, 1999, p.234) that must be identified to enable sound decision-making. Haughton's reference to Turner, Pearce and Bateman's (1994) differentiation between "very weak" (or "light green") and "very strong" (or "deep green") sustainability is one of the main debates underpinning decision-making for sustainability. The difference between weak and strong sustainable development implies a deep conceptual gap crucial in defining policy making and understanding this is essential to comprehend issues related to development goals. Optimal decision-making in both weak and strong sustainability requires knowledge of the available natural capital. Natural capital refers to ecosystem services while human- or man-made capital is made up of human capital (individual competences), physical capital (human-made structures), intellectual capital (skills and knowledge held by a society) and social capital (conf. Section

2.2.2.2). But such measurement has not yet satisfactorily been achieved, thus the total capital stock (the sum of natural and human-made capital) is not known (Perman *et al*, 2003) (see also reference to critical natural capital in the following paragraphs). Moreover, the potential substitutability between natural and human-made capital has not been defined, thus potential substitution is not solely based on rationality ("science and technology"), and subjectivity ("taste and/or ethics") also plays an important role (Perman *et al*, 2003, p.91).

Weak sustainable development has been the dominant standard in decision-making for sustainability (Neumayer, 2003). These development goals are embedded into neo-classical economic theories (Nilsen, 2010) and imply possible substitution between nature and economy (Ayres *et al*, 1998; Chatterton, 2002). Economic compensations can counterbalance the loss of natural assets (or *vice versa*), the ultimate objective being to increase human utility. Weak sustainable development is translated in practice into a utilitarian use of natural resources, potentially presenting a threat to long-term sustainability, as it can open the door to excesses, for instance in natural resources' extraction or land settlement policies. Agyeman *et al* (2002) define weak (or soft) sustainability as a situation where natural capital can be replaced by manufactured capital as long as the former is equal in value. They identify the limits of weak sustainability which are the impossibility of valuing all natural services and the impossibility of replacing all of them with human made products. Following weak sustainable development precepts can lead to the perpetuation of the actual situation, which, in fact, is not sustainable (Buckingham, 2007). Ayres (2007 and 2008) accepts that substitutions between natural capital and human capital are possible in the long term thanks to technological solutions but are "extremely limited in the short to medium term" (2008, p.292), considering existing technology and scientific knowledge. Therefore weak sustainability supporters are technology optimists. But, as defended by Ayres (2007), the technology pessimist's vision is more pertinent as for many known technologies the maximum potential efficiency has already been reached. Krysiak (2006) concludes that weak sustainable development is "either based on a physically inconsistent model or ethically unattractive, in the sense that it guarantees future generations the possibility to meet their needs only under

rather optimistic assumptions on future technologies or preferences" (p.190). In addition, Counsell and Haughton (2006) point out the difficulty of defining which natural capital is critical, and the environmental carrying capacity. Therefore, subjectivity plays a relevant role in the debate between strong and weak sustainable development, the assessment of natural capital and its resilience to human pressures. Weak sustainable development is actually the dominant tendency in decision-making for sustainability, however it has been criticised as unrealistic due to its limited substitution capacity (Krysiak, 2006; Ayres, 2007), addressing the need to evolve towards higher levels of sustainability.

On the other hand, strong sustainable development (*e.g.* Costanza, 1991; Daly and Farley, 2004; Nilsen, 2010) proposes complementarities between economy and nature, which means no trade-offs between natural assets and economy or at least limitations to these trades-offs. Pearce's (1988) early studies advocate that most sustainable development relies on natural capital preservation: "we can say only that it is more likely that declining K_N [natural capital] will be correlated with reductions in sustainability" (p.600), defending strong sustainable development principles. Ecological economists are among the defendants of strong sustainability (Gowdy and Erickson, 2005; Nilsen, 2010). But strong sustainability precepts that advocate the preservation of the integrity of every single natural resource (individual subsets of natural capital) have been considered as unrealistic, which is why trade-offs between higher classes of natural capital are accepted (Pernam *et al*, 2003). An example of this could be the potential compensation of the loss of rain forest in Brazil with plantation of an equivalent area of taiga in Canada. There is a gradient within strong sustainability: at one end these trade-offs are seen as possible, at the other end the reduction of natural capital is not considered. This can produce ambiguous situations difficult to identify either as weak sustainability or strong sustainability (Figure 5.3 illustrates this indefiniteness). Ayres *et al* (1998) defend the notion that strong sustainability accepts the preservation of a minimum quantity of economic, ecological and social capital; in opposition to "'very strong' sustainability", such as Deep Ecology, which does not accept any destruction of ecological capital:

> "Under the strong sustainability criteria, minimum amounts of a number of different *types* of capital (economic, ecological and social) should be independently maintained, in real physical/biological terms. The major motivation for this insistence is derived from the recognition that natural resources are essential inputs in economic production, consumption or welfare that cannot be substituted for by physical or human capital. […]
> 'Very strong' sustainability — like supported by the Deep Ecology movement and those who believe in the 'right-to-life' of other species — would then imply that every component or subsystem of the natural environment, every species, and every physical stock must be preserved."
>
> Ayres *et al*, 1998, p.4

In order to promote the transition from weak to strong sustainability, Nilsen (2010) advocates compromise and proposes "reflexive sustainable development". This approach consists of comparing both typologies of development and, in arguing which is better, enabling a comparative analysis approach to foster ideas interchanging between weak sustainable development and strong sustainable development schools of thought in order to promote "mutual understanding" (Nilsen, 2010, p.496). Nilsen proposes to engage in the debate between concerned stakeholders for specific cases as this might make it easier to tackle conflicts of interest. Indeed, working on a small scale makes it more feasible to understand the combination of different elements crucial in sustainability. The controversial idea of islands as potential laboratories for sustainability is developed in Section 2.3; while the following section will analyse local initiatives for sustainability.

2.2.1.2 Local initiatives for sustainability and LA21

In the context of economic development local and regional authorities are seen as more appropriate to lead with policies due to greater flexibility and awareness of local issues and challenges (Haughton and Naylor, 2008). Additionally, Morphet and Hams (1994) observe that localities can greatly benefit from adapted environmental management practices to their own characteristics. Indeed it is an opportunity to be closer to the sustainability issues at stake as well as the answer(s) to these problems (Fidélis and Moreno Pires, 2009).

One example of local participation in decision-making is sustainable regeneration. Haughton (1998) defines sustainable (economic) regeneration as a long-term process, involving an active local population and combining economic, social and environmental concerns in a balanced way. From Haughton's perspective sustainable regeneration should follow sustainable development principles, which are: "inter-generational equity; social justice; geographic equity; participation; and holistic approaches" (p.873). He states finally: "I would argue that regeneration initiatives which overly prioritize one area of action over another […] or which lack deep and meaningful community engagement, almost invariably fail in the long term to bring about benefits for those communities most in need" (p.872). Therefore these initiatives should be balanced and they should be inclusive of community perspectives and contributions. Sustainable regeneration encapsulates pivotal concepts of what decision-making for local sustainability should be: participation, fairness, inclusiveness and a holistic perspective.

Local Agenda 21 (LA21) (Chapter 28 of Agenda 21) is one of the most remarkable initiatives in Agenda 21 (Selman, 1998; UN, 2012) even though the objective of "most local authorities in each country should have undertaken a consultative process with their populations and achieved a consensus on 'a local Agenda 21' for the community" by 1996 (Chapter 28.2a) is not yet reached. LA21 is acknowledged to be potentially of great benefit for local sustainability, but actual implementation is the exception, and in some cases the processes are withdrawn (Lucas *et al*, 2003; Fidélis and Moreno Pires, 2009). Joas and Grönholm (2004) observe that LA21 processes are mostly undertaken by wealthy and stable municipalities and that the differences within European countries (Nordic, Western, Southern and Central and Eastern countries) are not so pronounced; although Nordic and Western countries perform better overall they are closely followed by the other three regions. Therefore it seems more relevant to understand what the factors that have conditioned the LA21 projects in Europe are, than to compare their implementation in different European countries.

In the context of LA21 it is relevant to question why projects and policies, that should increase general well-being and quality of life, face difficulties in their

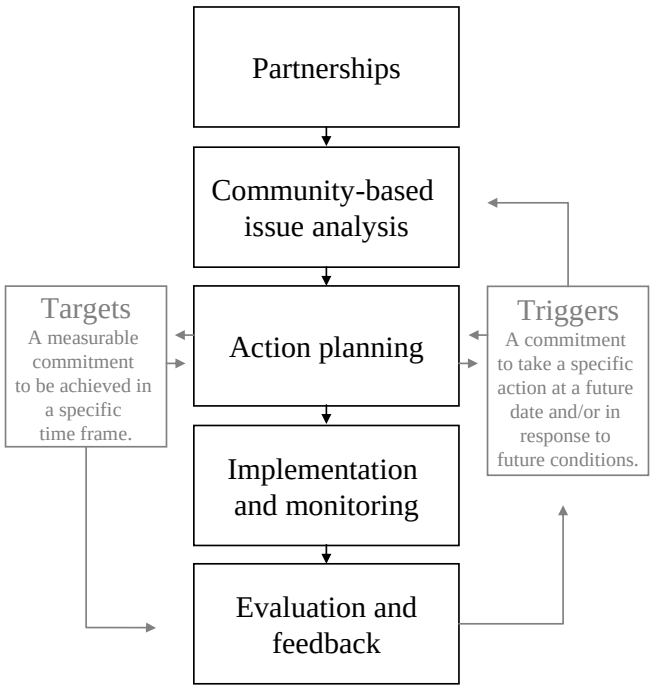
implementation. As referred to in Section 2.2.1, Kollmuss and Agyeman (2002) explain this by the existence of multiple barriers and the complexity of internal and external factors influencing pro-environmental behaviours. It is also relevant to consider if there is real political will in the transition to sustainability, and if the conflicts of interest and complexity of the issues do not lead to political immobility: "there are suggestions that LA21s often make rapid initial progress because agreement is reached fairly quickly over a range of targets, whilst avoiding the relatively few (but fundamental) areas where there is intractable disagreement" (Selman, 2000). Indeed local authorities capacity to steer this change has been questioned because of their biased position tending to favour the *status quo* (Clark and Netherwood, 1999). Municipalities show a high level of awareness about the need to undertake sustainable management of their local resources, however they point out their limitations in modifying some individuals unsustainable behaviours; thus very often local authorities lack the potential to undertake the transition (Evans and Theobald, 2003; Selman, 2013).

Environmental awareness is not sufficient to produce effective environmental policy because economic and social issues tend to be given priority, leaving environmental issues in third place; as a consequence there is a gap between the initiatives produced in the context of LA21 and their implementation (Eckerberg and Forsberg, 1998; Gram-Hanssen, 2000). The LASALA project shows that municipalities have assimilated the need to integrate social, economic and environmental issues; but economic priorities usually outweigh environmental and social ones, unbalancing the required equilibrium and therefore compromising the development of effective policies for sustainability (Evans and Theobald, 2003; Joas and Grönholm, 2004). In addition, it appears that LA21 has a limited impact because in most cases there is no continuity in the long term; with most projects having a short-term nature (Fidélis and Moreno Pires, 2009). Evans and Theobald (2003) show that the requirement to develop long-term visions overwhelms local authorities (usually managed with much shorter time horizons); the fact that only 10 municipalities researched in the LASALA project (out of 230) used a 20-year reference is indicative of that.

As mentioned in Section 2.1, Agenda 21 has failed to promote integrated visions for development, in part because its structure as a document corresponds more to a sector-by-sector way of developing policies (UN, 2012). Indeed, with such a proliferation of sector-based agendas, coordination seems improbable. For instance, Local Agenda 21 in Lancashire set in its policy-making phase (1992-1994) four distinct specialist working groups (SWG) (SWG1: air, energy, transport and noise; SWG2: water, waste, land and agriculture; SWG3: wildlife, landscape, townscape, and open space; SWG4: education and public awareness) coordinated by a steering group. This way of organising the debates in specialised groups does not seem very likely to produce genuinely integrated and holistic visions that take into consideration the connections and potential conflicts between the sectors of activity involved in the different SWQs. Some LA21s are even exclusively sector-based (e.g. Càlvia in Spain (Royles, 2009), and the ISTOS - Innovation for Sustainable TOurism and Services - project in Greece focuses essentially on tourism (University of the Aegean, 2006)), handicapping them from the beginning in a process that can be seen as exclusive by outsiders, whereas it should be integrative and inclusive.

To help municipalities with their LA21s, the International Council for Local Environmental Initiatives (ICLEI) provides support and information on good and inspiring practices. It proposes a five-step process (Figure 2.1) to plan for sustainable development in the context of LA21. These guidelines, mainly based on the first and more successful LA21 cases, are aimed at local decision-makers and their partners. ICLEI characterises LA21 following five key components: the integration of issues and interests, the long-term character and the global dimension of the policy, and the sustainable management of resources. The five steps answer the question of who should participate in the process (partnership), what should be changed (issue), how to do it (action plan) and, once the experience has been undertaken, what should be improved in the policies. ICLEI's model is rather straightforward but it has the merit of being easily reproducible by local authorities and the promoters of LA21 projects.

Figure 2.1: The elements of sustainable development planning
(adapted from ICLEI, 1996)



Since 1992, LA21 has challenged localities to define or re-define their policy-making processes to create their own LA21, but within this plethora of possibilities "a remarkable degree of commonality" could be observed (Freeman *et al*, 1996, p.69). Indeed, Freeman *et al* (1996) identify three main models that have been followed in different LA21 processes in the UK; while each project was independent and each of them had to define its own methodology, Freeman and her colleagues noticed a series of similarities which allowed them to classify the different processes. These are the 'cascade', the 'sectoral' and the 'thematic' models (p.71-73). It is important to understand that these models are not rigid and that combination can be made between each other. The same typologies of participants are present in these three models but the differences lie in the way they are involved and how responsibility is distributed. The 'cascade' model implies that the local authority plays a central or leading role in the process which follows a pyramidal structure. This structure eases control of the process but tends to limit stakeholders' responsibility and ownership of the outcomes. In relation to this point, Morphet and Hams (1994) observe that LA21 can hardly succeed if local authorities' leadership is dominant. The core of the 'sectoral' model is the

central forum from which the different 'sectoral' working groups are derived. This process is non-hierarchical and it is associated with higher levels of transparency, and the organisation into working groups increases participants' integration and sense of ownership of the outcomes of the processes. Finally, the 'thematic' model is the process that enables greater levels of 'base-to-top' contributions; and this might explain the higher sense of ownership. This model is built around a theme that is used to convene interested participants. In this process the local authorities' role is one of coordination rather than leadership. What Freeman *et al*'s analysis shows is that whereas LA21s imply the same type and groups of participants, the way the decision-making processes are set up influences the participative processes and the final sense of ownership among the involved stakeholders. The 'thematic' model seems to perform better in this respect; therefore the participative processes should preferably be built around an overarching theme which serves as a central discussion point (such as foresight scenarios, Section 2.2.3).

2.2.1.3 Indicators for local sustainability

Research on indicators for sustainable development had an institutional start at the 1992 Earth Summit with Agenda 21 (Holman, 2009). In order to enable decision-making for sustainability LA21 projects have been set up to define sustainable indicators involving local populations in 'bottom up'[6] processes. The use of indicators is aimed at raising awareness among populations about the need to adopt a more sustainable way of life and the need to change political points of view about these issues and the role decision-makers can play, while being pluralist and inclusive (Macnaghten and Jacobs, 1997). Sustainability indicators are seen as an opportunity to manage relevant data, and they can also be used to set sustainable development goals. They may also act as signals of potential social, economic or environmental harm: they are also seen as vehicles for voicing concerns, and raising social awareness on these subjects (UN, 2001). Since 1992, research has been undertaken to develop local sustainability indicators (LSIs).

[6] The terms 'bottom' and 'down' have been widely used to refer to lay citizens, in opposition to decision-makers, technocrats or stakeholders who are placed 'up' or 'top'. In my opinion, and especially for sustainable development matters, this terminology (bottom and down) is rather pejorative for lay citizens or lay stakeholders and reflects a lower responsibility and passive role of the citizens. I would rather use the term 'base' as it implies a more active meaning.

LSIs are related to governance because they are tools to steer change, to inform and to monitor the effects of the policies (Rydin, 2007b). But Rydin also acknowledges the limits of two projects involving LSI initiatives in the London Borough of Southwark[7]. The LITMUS project aimed at raising awareness of sustainability and at developing sustainable indicators with the local community. Another relevant project on the subject, the PASTILLE (Promoting Action for Sustainability Through the use of Indicators at the Local Level in Europe) project, was aimed at studying the impact of local sustainable indicators in decision-making. The researchers conclude that there is no direct influence on local policies, however the project had positive effects in that it revealed different stakeholders' points of view on sustainability, it had a positive effect on governance processes, and it proved to have the potential to influence local decision-making (although not automatically in the short term) (Rydin *et al*, 2003). Pinfield (1996) and Gahin *et al* (2003) also point out the limited impact in the short term of sustainability indicators in policy making for sustainability. But developing sustainability indicators remains an opportunity to involve the community with these issues and it can play a crucial role in fostering a more pro-environmental society, for instance by making sustainability a "commonplace and (a) normalized" concept (Holman, 2009, p.373).

2.2.2 Public participation in policy making for sustainability

The deep modifications in socio-economic behaviour inherent in decision-making for sustainability require the active involvement of affected stakeholders and the public. Policy making for sustainability should involve public participation (Selman, 2000) and public involvement is considered to be positive in effective decision-making for sustainability:

> "While allowing citizens access to the policy-making process has long been seen as a right, it is now being realized that engaging citizens in policy-making processes through deliberative processes actually results in more effective and long-lasting policy that will help communities, NGOs and local

[7] Southwark case studies: LITMUS and the regeneration of the Elephant and Castle area. The regeneration of the Elephant and Castle area was less successful due partially to internal conflicts in the Community Forum in charge of defining the LSIs (Rydin, 2007b).

> governments in their pursuit of a high quality of life that rests on a balance between the environmental, economic and social issues characteristic of a sustainable community."
>
> Agyeman and Angus, 2002, p.360

More recently, Hirano (2011) wrote on the relationship between national strategies for sustainable development and the wider public:

> "The implementation of a NSDS [national sustainable development strategy] needs to be an integral part of government policies, but such strategies are not only the responsibility of governments. Sustainable development can only be achieved through individual and collective efforts by all responsible actors, including the private sector."
>
> Hirano, 2011, p.15

The failure of conventional analytical techniques to assess complex decision-making cases, such as analysing sustainable development objectives, led to 'post normal sciences' (Funtowicz and Ravetz, 1991, 1994 and 2003; Burgess, 2000). Studying the sustainable development perspectives of an area requires the consideration of many points of view and the analysis of multiple criteria (conf. Section 2.4). As Funtowicz and Ravetz state:

> "The task is to begin the construction of a system of concepts and practices for economics in which all these complementary perspectives can be articulated in a rational dialogue, one in which ethical commitments can be articulated. This can be accomplished in an ecological economics which is a post-normal science."
>
> Funtowicz and Ravetz, 1994, p.199

Dobson (2007) argues that decision-making for sustainability is inherently a democratic process, his seven arguments are: (1) 'greens' themselves are concerned with the process of decision-making as much as the consequences of the policy, (2) sustainability is an open objective, it cannot be imposed by anyone, and (3) because environmental objectives are led by uncertainty, democratic processes seem to be better adapted to deal with them, (4) democracy is also the way to produce a better policy because it is open to deliberation and the required plurality. Regionally and locally based decentralised participative processes (5) are also positive in environmental processes. The last two arguments proposed by Dobson are historical and they concern (6) the superiority of democratic as

opposed to authoritative policies in environmental matters, and (7) the fact that early environmentalists themselves proposed democratic and participative processes to deal with environmental issues. Dobson also sees democratic processes as efficient in provoking modifications to individuals' lifestyles because it fosters "deeper commitments" (p.134) that last longer in time.

Agenda 21 supports public participation in developing policies for sustainable development and it advocates innovative participation processes (UN, 1992). In 1998, the Aarhus Convention (UN, 1998b and 2000) confirmed the importance of participation for the European signatory countries by considering participation, along with access to information and justice, central to the protection of individuals' environmental quality. More recently, a Eurostat report (2011) re-stated the engagement of the EU with participation in policy making for sustainable development. The Commission on the Measurement of Economic Performance and Social Progress places "political voice and governance" (p.177) as one of the dimensions of well-being, and renews Agenda 21 ideas for participation by affirming:

> "Instrumentally, political voice can provide a corrective to public policy: it can ensure the accountability of officials and public institutions, reveal what people need and value, and call attention to significant deprivations. Political voice also reduces the potential for conflicts and enhances the prospect of building consensus on key issues, with pay-offs for economic efficiency, social equity, and inclusiveness in public life."
>
> Commission on the Measurement of Economic Performance and Social Progress
> Stiglitz *et al*, 2009, p.50

In *Re-thinking Science* (2001), Nowotny, Scott and Gibbons link the opening up of knowledge production with an increase in complexity. One of the consequences of complexity is that linear causal explanations are understood as limited. Indeed the authors affirm that "relationships are non-linear and subject to ever changing patterns of unpredictability" (p.5); they argue that chaos theory implies a divorce between determinism and predictability and it shakes the conventional knowledge gap between citizens and decision-makers, treasurers of 'specialised' knowledge. A consequence of that can be research centres' increasing permeability towards

societal expectations (Gibbons, 1990). This means possible synergies between research centres and, for example, small companies or local authorities. In consequence, scientific fields that embrace diversity, or "strongly contextualized knowledge" (2001, p.131), are more relevant and, maybe, more successful in knowledge production than conventional scientific production which does not consider social expectations so actively; strong contextualisation should shape science at its core. "Strongly contextualized knowledge" is produced when there is an active predisposition from science to listen to social matters: by integrating and being influenced by non-specialist perspectives, by increasing uncertainty as well as variation and by being conscious of the role individuals play in scientific knowledge. These three conditions can happen simultaneously or not. Nowotny *et al*'s argument is that the greater the contextualisation, the greater the reliability, creating "socially robust" knowledge, the meaning of which can be summarised as scientifically produced knowledge publicly considered to be true, accepted outside the 'laboratory'. As well opening up the scope of participation, this can help to overcome public disillusionment on the matter at stake (Eden, 1996).

A participative process that promotes information and perspective sharing can also provide the opportunity to overcome the limits of conventional education. Conventional education trains specialists but with a narrow focus that does not provide them with the tools to answer to general and multidisciplinary problems, such as decision-making for sustainability. In that sense the study of islands has been considered to be an opportunity to enable the interdisciplinary approach required in sustainability (Stuart, 2010). This point was recently stated by Narsey Lal (2011) in her work on Pacific Islands, and the need for realising foresight exercises to support decision-making in agriculture:

> "It is also about harnessing the interests and energies of the people of the Pacific, using old and new ideas, scientific and traditional knowledge, and creating enabling environments that allow people to control their own destiny as well as of their nation.
> This is indeed a challenge, particularly since the traditional education system generally produces experts trained in individual subsystems, around individual disciplined-based specialisations. […] There is a need to address multifaceted

> problems in a more holistic, integrated and co-ordinated manner to produce the synergistic outcome."
>
> Narsey Lal, 2011, p.87

Harrison *et al* (1998) suggest a higher level of partnership at a local level in order to achieve good results in Biodiversity Action Plans (BAPs): "local partnership between nature conservationists, business interests, public sector institutions and community groups will need to be established if BAPs are to prove an effective delivery mechanism for biodiversity" (p.306). The reasons they propose these are that partnerships at the local level facilitate the implementation of national policies; local volunteering can compensate for a potential lack of financing; and being active in the creation of the plan, the partners are more willing to accept it. The recognised challenges of these partnerships include the difficulty of matching local knowledge with the issues related to conservation and the effectiveness of inquiry processes. They conclude that consultation processes should consider local knowledge to set up "the mutual trust upon which all partnerships need to be based" and that local and scientific knowledge (on biodiversity) should be mutually inclusive rather than exclusive. In the case of protected area conservation the involvement of stakeholders and, more generally, the local population is also required; as Wells and McShane (2004) acknowledge:

> "Among the key issues, there is now a broad consensus that most protected areas will have limited future prospects without the cooperation and support of local populations."
>
> Wells and McShane, 2004, p.513

The previous paragraphs have developed the argument for the requirement and the benefits of public participation in decision-making for sustainability. But participatory processes raise a number of questions, such as levels of participants' expertise, participants' representativeness or the real reach of participation. Renn *et al* (1993) argue that lay citizens' contributions are effectively valid in the context of policy making. This is especially true when participants have been correctly informed; meaning that they learn from and during the process, and they understand the issues and technical jargon. This is congruent in cases where specific technical issues are not discussed or analysed (for instance a wide scenario foresight process for an entire area). Burgess (2000) agrees that local and

informal knowledge keepers can discuss specialists' points of view; she defends the existence of valid knowledge outside scientific or technical circles:

> "Such knowledge worlds exist beyond the laboratory walls and constitute a dynamic field where different kinds of authority are contested fiercely by those who may not have academic expertise but who do have considerable depths of local or 'tacit' knowledge."
>
> Burgess, 2000, p.274

It is interesting to emphasise the use of "dynamic" in her affirmation as it implies that this knowledge is changing and adapting to changes in the environment (in the wider sense). Moreover, lay citizens' participation responds to the post-modernist assertion that analysing information and data does not necessarily unveil reality. Hence knowledge is not monopolised by scientists or academics: "(k)nowledge now has a variety of sources and takes a variety of different forms" (Rydin, 2007a, p.54). Irwin proposes "citizen science" (p.166) as an answer to the need to include citizens' voices in the assessment of environmental matters: "such a term ['citizen science'] in this context implies a 'meeting point' between different forms of knowledge and understanding. It also implies the possibility of cross-fertilization within a diverse area of different knowledges" (Irwin, 1995, p.166). But such participation should respect some ethical considerations of the role participants have in the process they are involved in.

From an ethical perspective participants should be informed of the reach their contribution will have in the policy. Ethics are indeed an important matter when a participatory process is considered; Renn *et al* (1993) state that policy acceptance is linked with the equitability of the policy-making process. Following Fiorino's (1989) and, more recently, Stirling's (2006) perspective, participants should clearly be told the reasons for their participation in the process they are involved in: "normative" (democratic ideals), "substantive" (more rigorous information) or "instrumental" (foster trust in the policy or project in discussion). Participants would have different expectations (and probably levels of focus and interest) if they are aware of the reasons why the process is open to them, a transparent explanation of this has obvious ethical grounds. Furthermore, the promoters of participative processes should be aware that the nature of the participation

(normative, instrumental or substantive) influences the design of the process (Stirling, 2006). Promoters should make their aims explicit to avoid participants' potential misunderstanding and later disappointment. They should also provide key information and raise issues in a comprehensive way. This might assure proper understanding of the issues at stake; thus preventing manipulation.

In this context it is important to appraise participative processes; this is undertaken in the next section (Section 2.2.2.1) by means of Arnstein's (1969) and, more recently, Fung's (2006) classifications. But it is also relevant to understand the role that social capital might play in local development (Section 2.2.2.2). In addition to this, the focus group method is also analysed (Section 2.2.2.3) because this research method is used in a wide variety of participative projects (and in the present project, conf. Chapter 4: Section 4.2.4) to gather qualitative information.

2.2.2.1 Appraising a participative process

Arnstein (1969) proposes a one-dimensional classification of participative processes, the participation ladder, in which the lower rungs correspond to dishonest and manipulative uses of participation, while the higher rungs mean higher levels of "citizen power", reaching its peak on the "citizen control" rung where citizens have direct decision-making responsibilities. Her classification has been widely accepted and used, but this one-dimensional appraisal based on relations to power ignores other important factors; there are "missing rungs, snakes and multiple ladders" (Quetzal Tritter and McCallum, 2006, p.161). Arnstein's ladder presents some limitations as it does not consider how participants are involved, the existence of potentially different categories of participants, the nature of the final result, the level of trust in the process and the outcome, and the effective involvement in the process ("missing rungs"). The "snakes" identified by Quetzal Tritter and McCallum are the defects of her model which are a consequence of not considering the impact of the process on individuals, and of potential confusion between involvement and empowerment. Moreover, it can lead to the exclusion of minorities or groups that do not have the same capacity to get involved. Finally, Quetzal Tritter and McCallum point to the

existence of "multiple ladders" which are a derivation of the fact that Arnstein's analysis is one-dimensional and it does not capture the complexity of these participative processes.

In order to improve Arnstein's appraisal, Fung proposes a three-dimensional classification of public participation processes: the "democracy cube" (Fung, 2006, p.66), which updates and deepens appraisal. The three dimensions of Fung's analysis are: "participants selection", "communication and decision" and "authority and power" (p.66-69). The richness in this conceptualisation is the reason why Fung's "democracy cube" has been used in the present thesis to appraise the participative reach of the proposed methodology (Chapter 5: Section 5.1.1). Figure 2.2 represents the triple axis corresponding to the "democracy cube" and Table 2.1 defines the different dimensions of the cube and the related categories within each dimension. The cube with brown edges represented in the figure is an example of a hypothetical project in which participants have communicative influence (authority and power axis), the process is open to anyone wishing to participate (participants axis) and the process has the potential for participants to develop their own point of view (communication and decision-mode axis).

Figure 2.2: 'Democracy cube' (Fung, 2006)

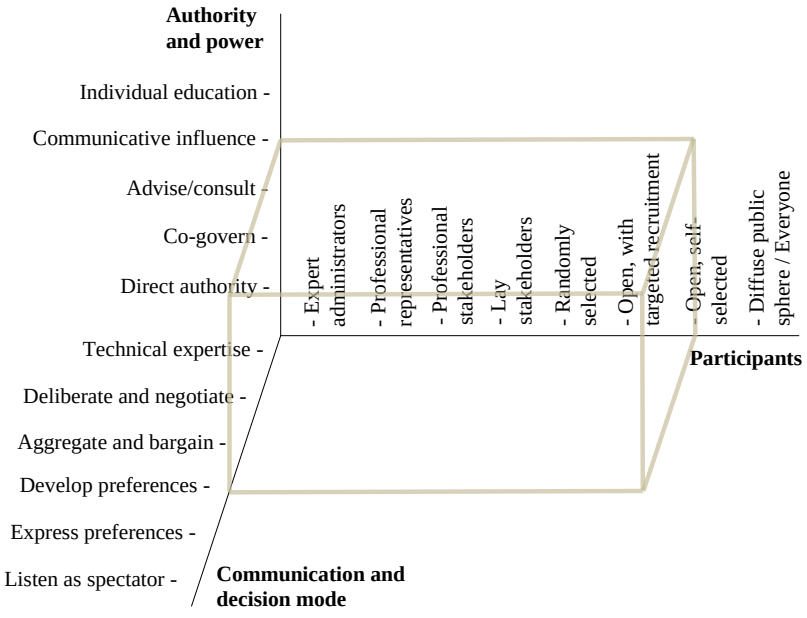


Table 2.1: Democracy cube dimensions and methods

PARTICIPANTS SELECTION	
Expert administrators	Civil servants (high graded).
Professional representatives	Politicians.
Professional stakeholders	Paid experts (interest groups or lower graded civil servants).
Lay stakeholders	Voluntary citizens with special concern on the subject.
Randomly selected	Random selection guarantees high levels of representativeness.
Open, with targeted recruitment	Selectively recruited participants among targeted groups. It is an opportunity to target groups otherwise hardly reached.
Open, self-selected	Everyone who wishes to participate, but in practice not so representative.
Diffuse public sphere	Public opinion.
COMMUNICATION AND DECISION	
Technical expertise	Policies are defined by experts.
Deliberate and negotiate	The process enables participants to exchange points of view, information… aims at agreement (if possible consensus).
Aggregate and bargain	Perspectives are gathered and negotiated. A best option is to be chosen.
Develop preferences	Learning process where preferences can be modified, information is shared. Specialists do not necessarily participate.
Express preferences	Participants can express their opinion.
Listen as spectator	Passive witness, participants get informed.
AUTHORITY AND POWER	
Direct authority	Citizens decide directly how to use the resources.
Co-govern	Direct participation in the design of policies and plans.
Advise/consult	Participation is designed as a consultative process where participants inform the promoters.
Communicative influence	Modify citizens' or politicians' points of view.
Individual education	Learning and civic interest drives the participant.

This section has reviewed the relevance of the design of participatory processes, and the requirement for inclusiveness and transparency, but there is a factor that conditions policy implementation and effective governance: the presence or absence of social capital and its nature. Social capital's characteristics and its relation with decision-making are now developed.

2.2.2.2 Role of social capital in local development and its limits

Building strong social capital should be considered as a success factor for long-term sustainability as it "seems to be a precondition for economic development as

well as for effective government" (Putnam, 1993a, p.3); in this perspective transition towards sustainability can then benefit from its existence. Indeed "social capital enhances the benefits of investment in physical and human capital" (Putnam, 1993a, p.2), and natural capital (Curtis, 2003). Coleman (1988) identifies human capital as a consequence of people's novel abilities, thus behaviour: "human capital is created by changes in persons that bring about skills and capabilities that make them able to act in new ways" (p.100). Social capital has also been linked to social resilience through the role of institutional resilience (Adger, 2000). A working definition of social capital for this thesis is here required. Following consideration of definitions given by Bourdieu (1983, p.249), Coleman (1988, p.98), Putnam (2000, p.19) and the World Bank (1999) a definition of positive social capital can be:

> the cohesion, relationship and connections of different social elements (individuals or institutions) that enhance durably the social interactions between people, and that have the positive effect of increasing the value of existing and potential resources, being these public or not.

Wilson (1997) points at the role productive social capital plays in community "prosperity and adaptability" (p.756). Productive social capital benefits community wealth by supporting networks of businesses that cooperate by effectively sharing information, goods and services and performing more effective trade between each other. In opposition, unproductive social capital refers to the use of social networks to contain outside threats. But, small societies can have downward pressures that can counterbalance the positive aspects of social capital. One is the existence of "multiplex networks" (Boissevain, 1974, p.31-33), which occur when individuals in a community have different social roles, increasing mutual control. Islanders are by essence "polyvalent" and they "practice multi-tasking" (Baldacchino, 2005, p.249), thus they are prone to developing these complex networks of "multiplex relationships" (Baldacchino, 2008, p.49).

Social capital, from Putnam's perspective, is considered key for sustainable development (*e.g.* Ritchey-Vance, 1996; Bebbington, 1997; Beem, 1999; Curtis,

2003; Rydin and Holman, 2004; Tsai, 2008). Therefore, involving communities in projects consisting of planning local sustainable development can strengthen social capital as these processes can foster network creation, information sharing, and increase community awareness of sustainable development challenges. Agyeman and Angus (2003) identify two reasons why the presence of social capital in a community is positive for sustainability. First, it sets the conditions for the development of new behaviours within the community. Second, awareness of social issues is even more relevant than information on environmental issues to foster sustainable behaviours. Strong positive social capital is about efficient, constant and long-lasting communication and partnership between individuals by which they might share their perspectives and work together to improve their collective situation. Social capital is mainly the means by which a society shares knowledge; the stronger the links, the better knowledge is trusted and shared and the better it enriches the debate on targeted issues, thus it makes decision-making more effective at a societal scale, benefiting the whole community. Strong social capital, implying knowledge sharing, is also a source of resilience. A resilient society is more able to learn and adapt to change, for instance climate change challenges (Adger *et al*, 2005; Baldwin and Chandler, 2010). Previous research has demonstrated that small communities can design "self-development strategies" that can be successful in energising local economies (Korsching and Allen, 2004, p.387). Development strategies for an area have to consider many criteria such as nature conservation, sustainability, isolation, seasonality; this plethora of, often conflicting, criteria is seen as a challenge. Local initiatives can help identify solutions based on local know-how, tacit knowledge, traditions and opportunities, and are a chance to develop local employment. Such strategies help strengthen economic activities and enhance local specificities and potential comparative advantages.

Rydin and Holman's (2004) synthesis of Putnam's vision highlights the role of trust: "building social capital can reduce the costs of transactions by providing ready information of relations, generating trust that remote actors will do what you expect and thereby provide increased reliability, and encouraging more reciprocity with tit-for-tat arrangements" (p.128). Coleman also recognises the

relevance of trust within a society in achieving higher productivity levels: "a group within which there is extensive trustworthiness and extensive trust is able to accomplish much more than a comparable group without that trustworthiness and trust" (1988, p.101). Moreover, improvements in citizenship and participation also depend on the level of trust that people have in their institutions. Confidence in the government seems a precondition for a healthy social life. In fact, fostering citizenship when there is no confidence and satisfaction in the government seems to lead to sterile results (Stewart *et al*, 1995). Policies can help build positive social capital but it might be that existing social capital is used in opposition to the target policy or project (Portes, 1998); exposing one of its limitations.

But, like sustainable development principles, social capital suffers from idealisation; no one is against it but its limits are seldom identified: "undoubtedly, individuals and communities can benefit greatly from social participation and mutual trust" (Portes and Landolt, 1996, p.20). Putnam himself acknowledges that social capital might not be so easy to produce (1993b). Portes (1998) critiques condescending postures on social capital as its potential negative side effects are not always considered, whereas, in fact, "sociability cuts both ways" (p.18). The identified negative effects are that social capital can be used to exclude 'the others'; people that do not belong to a group or network can be excluded in order to preserve the group's integrity or its interests (Putnam also identifies this potentially negative use of social capital). But social relations can also inhibit individual entrepreneurship initiatives within the group, as social control in small societies can lead to a loss of privacy and reduction of freedom, and it can inhibit its members. The fourth negative effect commented on by Portes is that social pressures might lead to "downward levelling norms" (p.17), censoring ambitious members and levelling the group to lower standards. A community, for the sake of its cohesion, might consciously, or unconsciously, be preventing its members from flourishing through business activities or limiting individual freedom by imposing uniformity. In these cases the side effects are that the community will not benefit from these potential actions.

2.2.2.3 Focus groups

The focus group method was initially developed as a behavioural science research tool (Stewart *et al*, 2007) to inform market research and the impact of mass media at the beginning of the 20th century (Morgan and Spanish, 1984; Stewart *et al*, 2007; Liamputtong, 2011). According to Merton (1987), a focussed interview method is appropriate to inform "every sphere of human behaviour" (p.551). It has proven itself in sociological studies (Morgan and Spanish, 1984; Morgan, 1996), it has been used in medical and nursing research (Powell and Single, 1996; Cunningham-Burley *et al*, 2001; Webb and Kevern, 2001; Aveyard, 2002; Jamieson and Mossel, 2003; Doman *et al*, 2004; Woodring *et al*, 2006), audience response (Hoijer, 1990; Stewart *et al*, 2007), geographical research (Macnaghten *et al*, 1995; Burgess, 1996; Goss and Leinbach, 1996; Hopkins, 2007), and even in linguistic studies (Ho, 2006). But, as a research method, focus groups have often lacked scientific rigour (Kitzinger, 1994) and, in what concern geographical studies, deficient critical reflection on their use (Hopkins, 2007).

Focus groups differ from individual interviews because they mainly provide an opportunity of having participants discuss particular themes in groups. The "argumentative interactions" (Kitzinger, 1994, p.113) produced in a focus group can lead to information sharing among the participants. As Kitzinger states: "when group dynamics work(ed) well the co-participants act(ed) as co-researchers taking the research into new and often unexpected directions and engaging in interaction which are (were) both complementary (such as sharing common experiences) and argumentative (questioning, challenging, and disagreeing with each other)" (1994, p.107). In that sense focus groups are not meant to be a "representative sample of a population" (p.68) but they are the opportunity to explore new areas of knowledge about an issue in particular (Macnaghten and Myers, 2004).

The focus group method is flexible (Goss, 1996) and it can be adapted depending on the field of research it is used for (Stewart *et al*, 2007). They have proven to be highly adaptable to different research requirements but there are two dominant approaches to conducting them: one is more structured and is mainly employed in

marketing studies, while the less structured way of leading focus groups is preferred in social science research. In the later modality, the moderator plays a less directive role so that he or she can concentrate on the facilitation of the process (Morgan, 2002). Therefore there is no single way of applying this method and the researcher has to adapt the process to match the objectives of the research. Nevertheless, well conducted focus groups respect some pivotal points: it is a research technique intended to gather information about the opinions of the group members which are based on group interactions, guided through a facilitated discussion around a topic defined by the researcher (Kitzinger, 1994; Morgan, 1996, Cameron, 2000). Focus groups are therefore the opportunity for participants "to share their views and feelings about an issue" (Burgess, 1996, p.133). The number of participants varies from a minimum of four to a maximum of 14 participants (Doody *et al*, 2013); focus groups should be manageable for the facilitator, and they should foster debate among the participants while allowing all of them to contribute. Therefore the optimum size for a focus group depends on different factors; these can range from the expertise of the facilitator (a small group should be easy to facilitate while a larger group can be challenging for inexperienced facilitators) to the specific theme treated. Some topics might require more intimacy, and therefore small groups are better adapted, while others might benefit from including as many perspectives as possible (but focus groups must remain manageable and therefore very large groups are not common) (Doody *et al*, 2013).

In-depth discussion groups are an alternative to focus groups (Harrison and Burgess, 1994; Burgess, 1996; Harrison *et al*, 1998). In-depth discussion groups are usually preferred in cases where participants are asked to discuss issues that concern longer time horizons projects or policies; providing new information on the subject at stake. In-depth discussion groups are better suited for studies that require trust between the participants in order to allow them "to explore their feelings and attitudes in more depth" (Holbrook and Jackson, 1996, p.137). This type of discussion process consists of a series of meetings where participants already know each other, group dynamics are crucial in the process, and meetings are not heavily directed. On the other hand focus groups are usually aimed at

purposes such as consultancy projects for shorter term visions; these meetings are more guided by the moderator, and usually only consist of one meeting per group. Burgess (1996) observes that focus groups are preferable to in-depth discussion groups when the time available for the research is reduced. The less demanding focus group method is therefore more pragmatic (Holbrook and Jackson, 1996).

Focus groups can be used on their own or as complement to other research techniques, such as individual interviews, surveys or ethnographic observations; but they are more often combined with individual interviews (Stewart *et al*, 2007) (in the present study focus groups constituted of lay citizens were combined with scoping interviews with decision-makers and key informants; conf. Chapter 4). Crabtree *et al* (1993) observe that individual interviews allow greater depth in the analysis while focus groups are more useful for increasing the breadth of the analysis. Therefore, both techniques are complementary as their combination adds new dimensions to the research they are involved in. Morgan (1996) considers that the combination of individual and focus group interviews is a rather natural process. He proposes that they can be combined in two ways. One is as a follow-up to individual interviews to contrast the focus group interviews with the results of the individual interviews and to involve a wider public in the process. The other is to use individual interviews to explore in depth the outcomes of focus groups.

2.2.3 Foresight scenarios to reflect on sustainable futures

The WCED's understanding of sustainable development was strongly criticised by Visvanathan (1991). He criticises the "bureaucratic report" (p.377) approach to sustainability, and humanity's future in general: "the struggles of humankind are now sought to be captured in the grids of social science, and the classic narrative of social science is the bureaucratic report" (p.377). Governance through programmes is also criticised by Rose and Miller (1992) as "programmes complexify the real, so solutions for one programme tend to be the problem for another" (p.190). In Voss and Kemp's terms programmes produce "second-order problems" (2006, p.5) which are defined as a policy's "unintended consequences" (p.5). More narrative approaches, such as scenarios, can have the "warmth of a

story" that "can be told again and again" (Visvanathan, 1991, p.377). As Berkhout and Hertin (2002) write: "as a systemic and inclusive approach, scenarios offer a means of dealing with critical issues of innovation, reflexivity and framing in analysing change in socio-economic systems" (p.38), therefore the scenarios are useful tools in participative debates on transitions to sustainability. Berkhout and Hertin also advocate scenarios' capacity to engage with individuals who are not used to academic language. Moreover, from an ethical point of view, the use of scenarios is congruent with environmental justice and its requirement to be inclusive of otherwise ignored/marginalised social groups (Agyeman *et al*, 2002). The objective of including all people corresponds with the procedural aspects of environmental justice (Agyeman and Evans, 2004). The (Environmental Protection Agency) EPA defines environmental justice as follows:

> "Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, colour, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."
>
> EPA, 2013

Long-term issues challenge decision-making because factors can vary over time and because of the limited capacity to envision and consequently legislate for the future, although addressing them in advance can prevent higher costs (Lew, 2010). Foresight scenarios can be helpful tools in reflexive governance processes but also as promoters of change: "by putting these expectations in the form of scenarios, they have an effect on present day actions and thus feedback on the development itself" (Voss *et al*, 2006, p.166). Working with foresight scenarios favours backcasting processes, defined by Vergragt and Quist as: "generating a desirable future, and then looking backwards from that future to the present in order to strategize and to plan how it could be achieved" (2011, p.747). This entails thinking about a future ideal situation and analysing the possible actions that could be undertaken to reach this vision; therefore thinking about potential strategies for the transition. Eames and Egmose (2011), in the framework of the SuScit project on deprived urban communities, propose a 'base-to-top' methodology aiming at involving lay citizens in a process in which they develop and share their visions with experts (policy makers, practitioners, researchers and

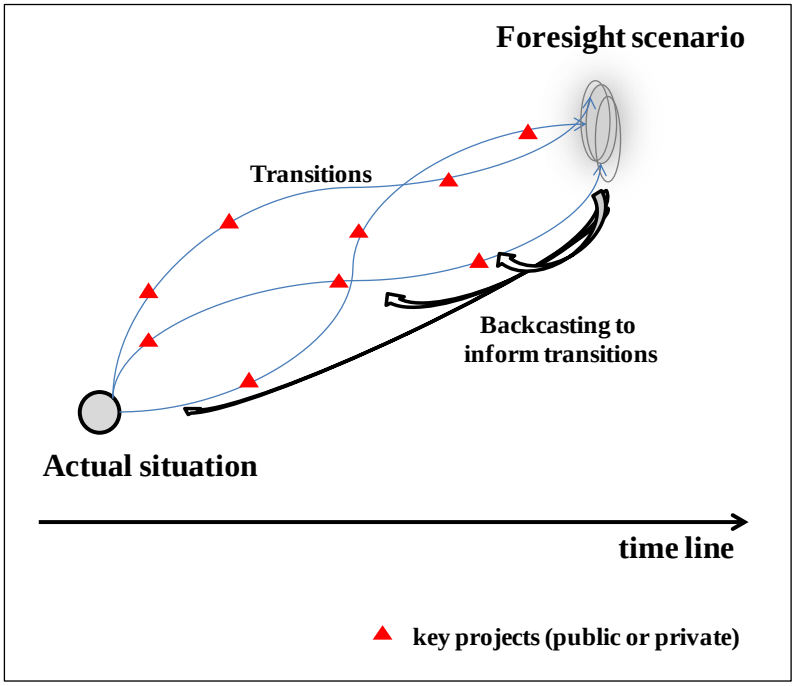
professional stakeholders) in order to set an agenda of "environmental and sustainability research needs" (p.771). Backcasting is thus enriched by actively incorporating local concerns, complementing conventional foresight exercises. Moreover, using foresight scenarios is a way of introducing in the 'pre-analytic' phase (Schumpeter, 1954) factors that otherwise might not be considered; as Daly (1991) states: "whatever is omitted from the pre-analytic vision cannot be recaptured by subsequent analysis" (p.255). This pre-analysis is obviously prior to the analysis itself, and it provides a framework for it.

Furthermore, long-term time horizon visions permit thinking about changes in the socio-technical landscape (Geels, 2002; Geels and Schot, 2007) as these changes require more time to happen; while smaller scale changes can be made in the short term and do not affect a whole society. Socio-technical transitions explain changes in multi-level perspectives. Multi-level perspectives of technology used by society refer to a tree level category consisting of the smallest scale of the niche level (which provides "room for innovation" (Schot, 1998, p.191) at the micro level), the socio-technical regime and the socio-technical landscape (Geels, 2002; Geels and Schot, 2007). Socio-technical transitions are interesting as they bring light to processes that include multidisciplinary decision-making policies. As Eames and Egmose stress, long-term time horizon visions:

> "Allow[s] participants and users to think beyond incremental changes (in their environment, technology, socio-economic and cultural relations), and to embrace the more radical and disruptive socio-technical changes which may be necessary to deliver sustainability"
>
> Eames and Egmose, 2011, p.769

The relation between foresight scenarios, backcasting and transitions can be visually represented. Figure 2.3 (author's elaboration) shows how a foresight scenario helps inform potential projects that make up the transition from the actual situation to the targeted scenarios. These projects can be private (for example, a farmer or an industry that decides to modify their practices) or public (for example, a state deciding on transport infrastructure or education projects) but by considering the envisioned future they are coherent both between each other and the foresight scenario.

Figure 2.3: Foresight scenarios, backcasting
and transitions (author's elaboration)



The blurry representation of the foresight scenarios in the figure is a consequence of the fact that the future is obviously not known in advance and that once the targeted time horizon is reached the result might not be exactly as planned (as unexpected circumstances might occur). But, if the transition has been driven appropriately, the possibility of getting closer to the objective are higher. While the foresight scenario serves as a reference to be constantly held in mind, the backcasting exercise informs the consequent (correct) actions to be undertaken. The 'backcasting arrows' coming out of the foresight scenario symbolise how the backcasting exercise works: from the perspective of the desired future the individual must reflect on the actions that need to be undertaken from 'the present' - the actual situation - to the set time horizon. This way, actions can be prioritised and an agenda of coherent projects can be set. Different transition pathways have been represented[8] to remind the reader that different strategies can be appraised and undertaken. It should be noted that they do not follow straight lines to illustrate that disturbances can happen at any point in the time line.

[8] These do not correspond to any previous analysis.

Foresight scenarios can also be associated with stories of the future. From Ryfe's point of view stories require discernment ("cognitive understanding") but also have a "moral and constitutional" dimension (2005, p.59). Moral in the sense that a lesson can be taken from the story, and constitutional because the public can identify itself with it. Reports on sustainability, or any other field, can inform a situation at a specific moment but as referred to in Section 2.2.1, environmental awareness is not enough to provoke deep changes in individual behaviours (Kollmus and Agyeman, 2002). This is especially crucial when one of the keys of non-sustainability is consumer behaviour. As Soron (2010) states: "the quest for sustainability has run up against the unwillingness of privileged consumers to relinquish the lifestyles to which they have become accustomed" (p.173). In these cases reports should foster a cultural shift (see reference to "culture as the fourth pillar of sustainability" (Nurse, 2006, p.32)), but in their normal format they rarely achieve this. A community's success in its transition to sustainability depends on deep and lasting changes in behaviour:

> "When discussing sustainable development it is critical to move beyond talking about preservation of 'the arts', "heritage" and 'cultural identities' to also include the broad civilizational notion embodied in culture as a 'whole way of life' because it informs the underlying belief systems, worldviews, epistemologies and cosmologies that shape international relations as well as human interaction with the environment."
>
> Nurse, 2006, p.37

Therefore to encourage deep social change, a more comprehensive tool than a bureaucratic report should be used. Foresight scenarios presented as, or closer to, stories might well be this communication tool. Foresight scenarios for regional development can become a *leitmotiv* in conventional conversations, by repetition they can be the seeds of cultural change. As Ryfe (2005, p.59) draws from Ricoeur (1980): "stories may be repeated; repeated often enough, they become tradition; and tradition is the basis of community". Wynne (2007) uses a narrative concept to refer to commonly accepted imaginaries that frame decisions and influence future development:

> "Indeed widely shared narratives have long-since left behind any possible association with specific authors, interests, or intentions. They are part of the cultural fabric. In consequence, such narratives also shape our futures, often in powerful ways."
>
> Wynne, 2007, p.73

2.3 Sustainability in small islands

> "Although an island may be small, its *milieux* are varied, and so it has the character of a world in miniature. It is thus important to reject mainland models and instead plan developments sensitive to the island's nature and scale, that is to say small and ingeniously conceived in order not to waste space, but rather to exploit it in a more complex and intricate way."
>
> Péron, 2004, p.338

What can be drawn from Péron's assertion is that islanders face the same general challenges for sustainability as mainland inhabitants but their geographic situation conditions their options for development and how planning should be undertaken. Islands have been the subject of specific and diverse studies[9]. They even have their own 'science': Nissology (McCall, 1994 and 1996), which is dedicated to the study of islands and their specific challenges (Depraetere, 2008), McCall defines it as: "the study of islands in their own terms" (1996, p.76). Islands share characteristics with other areas, but it is the combination of small size and isolation, and the obvious presence of water around the island territory, that characterises and conditions each island. As Péron (1993, in Taglioni, 2011, p.51) states: "the specific nature of insularity arises not from one or several characteristics, but from multiple interactions between heterogeneous elements".

It is generally understood that "islands suffer additional disadvantages associated with remoteness/isolation in addition to that of small size" (Armstrong and Read, 2002, p.447) and their economies are especially vulnerable (Campling, 2006; Guillaumont, 2010). For instance, small islands have a tendency towards specialisation (to take the best from their competitive advantages and the potential economies of scale) but economic models based on one activity are threatened by

[9] See for instance the existence of journals specialising in islands, such as the *Island studies journal* based in Canada, *Shima: The International Journal of Research into Island Cultures* based in Australia, the *International Journal of Island Affairs*, edited by Insula (the International Scientific Council for Island Development), the *Sustainable Development* journal special edition (2006) and the *Local Environment* journal special edition (2003).

potential crises in their area of specialisation (Grydehoj, 2011), increasing the economic vulnerability of the island.

However, the argument that geographic factors irreparably constrain island development has been discussed in the literature (Armstrong *et al*, 1998; Armstrong and Read, 2002 and 2003). Indeed there are possibilities that small islands overcome their "intrinsic handicaps" meaning that islands should address their specific constraints and develop a strategy that might reduce their economic vulnerability, while protecting their fragile environments (UN, 1998a; Rietbergen *et al*, 2007; Christofakis *et al*, 2009; Fonseca *et al*, 2011). Island development challenges, defining the wise balance between human activity and the carrying capacity of the ecosystems, can be summarised as follows:

> "One of the challenges small island developing states face is to balance economic benefits with environmental pressures arising from their industrial and agricultural endeavours. Island ecosystems are comprised of various subsystems: economic, social, cultural, political, physical, and ecological. The interaction of these subsystems determines the behaviour and sustainability of an island in the face of external disturbances."
>
> Huang *et al*, 2008, p.575

This section is aimed at exposing critical aspects of island socio-economics that frame their main sustainable development challenges and more specifically the issues related to the present research. But it also presents the study of islands as an opportunity to understand global sustainability issues.

2.3.1 Islands: models of the world and sustainability

Due to their characteristics islands are acknowledged to be places for innovative governance and organisation (Gagliardi, 2009), ideal to undertake innovative strategies for sustainability (Mead, 1976; Depraetere, 1991 and 2008; Kerr, 2005). Calado *et al* (2007) define islands as closed systems. Island maritime boundaries are a constant reminder that Earth is a closed system with limited resources (excepting solar energy). From this perspective, applying Boulding's analogy of "spaceship earth" the image of the 'spaceship island' can be used to illustrate the potential usefulness of islands as models for sustainability; and as Boulding

(1993, originally published in 1966) states: "we can only find out about a closed system if we participate in it" (p.297). Mead (1976) clearly states the benefits islands have as understandable models of the world:

> "(B)because these are island cultures, we actually have in them the closest thing to a model of the whole world -- an island where the people do not know there are any other people. […] We can study and analyze the behavior of people on islands and their relationship to a known environment; we can understand an island because we can sail around it, fly over it, climb over it, and catalogue every tree and plant and insect."
>
> Mead, 1976

As in "spaceship earth", islanders are the most concerned for the future of their island and they are also its main guardians. In that sense it can be said that islanders are involuntarily in a position that enables them to be more sensitive to the world's sustainable challenges. Their lives in "aquaria" (Putz, 1984 re-edition 2004, p.28) means that they have the experience of living in rather confined territories. Thus, islanders' isolation can be inspiring examples for the rest of the world. As Putz expresses on the Maine archipelago:

> "But there is still in the Maine archipelago, and on islands elsewhere, an intact vision of the world which differs from that of others and which offers not merely diversity and its advantages, but a sensibility about the world that the world could use, since citizens everywhere are coming to realize that the earth itself is an island. In this sense, mainlanders are the pre-Copernicans, and islanders are the most sophisticated, modern and up-to-date."
>
> Putz, 1984 re-edition 2004, p.31

Putz's vision of islands is coherent with Sale's bioregion concept. Sale defines three levels of bioregions: first the largest, the "ecoregion", then the "georegion" (which is a "coherent territory" within an ecoregion) and finally, the smallest, the "vitaregion". Following these classifications, a small island in an archipelago could be considered a "vitaregion": "discrete and identifiable with [its] own topographies and inhabitants, their own variations and human culture and agriculture" (Sale, 1983). The bioregion concept is used later in the following section to explain the notions of eco-localism and self-sufficiency in the small island.

Sustainability on islands depends on a series of key elements (which range from integrative coastline management to water supply) (Section 2.3.1.1). But it is also shown in the following sections that islands should try to increase their energetic and alimentary self-sufficiency as a means to increase economic resilience (Section 2.3.1.2), and that tourism plays a potential key role in island development (Section 2.3.1.3).

2.3.1.1 Key elements for sustainability in islands

Stratford's contributions on the notion of "islandness" - the sense of belonging to an island (her work relates to the emotional geographies of islands) -, are crucial to an understanding of the relation of islanders with their territory and the notion of sustainability. From her perspective, decision-makers in this geographic context should actively consider the conceptual implications observable on islands (this point also echoes the importance of identity on islands, conf. Section 2.3.3) but decision-makers tend to undervalue these crucial aspects. As Stratford concludes in her work:

> "Islandness moves people to value the special qualities of islands and protect them, often in response to globalization and modernization. Nevertheless, I also suggested that, in the conduct of government and in the production of various political geographies, those who govern on islands may be motivated or compelled to ignore, hide or 'fail to notice' the utility - indeed the ontological import - of islandness in their decision-making processes, especially where the imperatives of (economic) development are prioritised in the polity and generate internal conflicts over possible futures."
>
> Stratford, 2008, p.171

In what concerns strategies for sustainability on islands more directly, the eco-island (Huang *et al*, 2008) is an overarching concept that summarises the characteristics that should respect a sustainable island, the main requirement for an eco-island is to respect the functional integrity of the ecosystems while not handicapping socio-economic life which should be respectful of island characteristics:

> "The concept of an eco-island can be summarized by the following six themes: integrated ecosystem structure and function, powerful ESDS [ecological security defence system], sustainable use of natural resources, prosperous and stable eco-

> economy, comfortable human habitats, and widespread ecological awareness. Eco-island development should focus on protecting natural resources and virgin ecosystems from the disturbance of human activities since these natural resources and virgin ecosystems are essential for any island."
>
> Huang *et al*, 2008, p.587

Natural heritage conservation has been widely considered as essential for preserving ecosystem services, essential to support economic activities and human life on earth (Daily, 1997 and, more specifically in protected areas: Stolton and Dudley, 2010). These areas are critical in the sustainable development of small islands (Huang *et al*, 2008). As pointed out by Péron (2004) islands require adapted plans that address the issues of scale and that prevent the inefficient use of space and resources. But the characteristics of islands increase the complexity of this planning (Fonseca *et al*, 2011). Freshwater resources management (UN, 1990 and 1998a; Falkland, 1999), energy management (Monteiro Alves *et al*, 2000; Duic and da Graça Carvalho, 2004; Duic *et al*, 2008) and coastline management (Declaration of Barbados, 1994; Tobey and Volk, 2002; Calado *et al*, 2007) are examples of challenging decision-making for sustainability in small islands. Integrated coastal zone management is proposed as a solution to define appropriate coastal area planning (Calado *et al*, 2007). Coastlines challenge island management as there are often potential conflicts over their use, and they are also prone to degradation (Declaration of Barbados, 1994; Tobey and Volk, 2002). Special attention has been paid to coastline management on islands. See, for example, case studies undertaken in Madagascar (Rakotoson and Tanner, 2006), the Solomon Islands (Lane, 2006), Haiti (Ninnes, 1997), Indonesia (Nurhidayah, 2010), Fiji Islands (Thaman and Aalbersberg, 2004) and Cyprus (Mavris, 2011); in addition to these, Govan (2011) reviews some examples of good coastal management practices in the Pacific.

2.3.1.2 Self-sufficiency in small islands

The literature on eco-localism provides interesting insights into sustainable development paths for islands. Curtis (2003) defines eco-localism as "the economics of the local (placed) community. Its goal is to establish a healthy community economy" (p.85). It supposes the preservation of ecosystems, to put

the economy at the service of the society, while trying to reduce the local/global environmental impact of the economy (Ehrlich and Holdren, 1971). An eco-local vision of sustainability is interesting because it implies reflection on two important aspects of living on an island: boundaries and the option of self-reliance.

In small, remote islands boundaries seem obvious and effectively restricting. Even if in the 20th and beginning of the 21st centuries long-distance trade/commerce/transportation infrastructures and IT allow linking the islands with the rest of the world, these societies have suffered historically much more from these geographic restrictions, thus the limiting boundary is an integral part of the definition of islands. Eco-localists use the bioregion concept (Berg and Dasmann, 1977; Sale, 1983 and 2000) (or the local eco-system) as a reference for an appropriate scale for economies and businesses (Curtis, 2003).

The other interesting perspective on eco-localism is that it implies a larger degree of self-reliance: "the clear conclusion of eco-localism is that sustainability presumes (that) eco-local economies are largely self-reliant" (Curtis, 2003, p.94); local areas become less dependent on long-distance trade negative externalities, and can keep within their boundaries the positive externalities (Galtung, 1986). Eco-localism can be an answer to economic threats to SIDS pointed out by Campling (2006) (Section 2.3.2) as it is supposed to foster the domestic market, and it makes the island less dependant on international trade, thus less likely to suffer from economic hazards. As well, as local consumption and production are incentivised it is less likely that the transport costs influence product prices and, finally, political sovereignty is enforced thanks to a more autonomous economy.

The importance of energy management in sustainable development has been acknowledged by the UN since the Rio Earth Summit in 1992 and more recently in diverse agency reports: the UNDP *et al* (2000), the IAEA (2007) and the UNEP (2011). The UNDP (2000) report defines sustainable energy as: "(e)nergy produced and used in ways that support human development over the long term, in all its social, economic, and environmental dimensions" (p.3). A United

Nations internal discussion of the crucial role renewable energy plays in small islands has been held in diverse commissions on sustainable development sessions (*e.g.* UN, 1996 and 2006). The Altener project and the ISLENET network are two examples of initiatives undertaken to promote energy self-sufficiency in islands. The Altener project 'Development of RES investment projects in small-island biosphere reserves' (Torra and Izquierdo, 2001) testifies to the efforts put into developing renewable sources of energy for small islands. The European islands network on energy and environment, ISLENET (ISLENET, 2012), is aimed at promoting energy efficiency and the use of renewable sources in small islands. ISLENET promotes the Isle-pact project, the objective of which is to reduce the amount of CO_2 produced on the partner islands by 20% by 2020, promoting local development and job creation through the projects and increasing local concerns on the need for adopting sustainable technologies. But each island presents characteristics (e.g. geomorphologic, climatic or population) that imply the need to develop adapted solutions. For instance, hydropower and geothermal plants produced 99.9% of the electricity consumed in Iceland in 2011 (fossil fuel plants only produced 0.01% of the electricity) (Orkustofnun, 2013), but this energy mix is only possible in volcanic islands with similar geomorphologic characteristics.

The use of renewable energies is perceived as a great opportunity for islands that have scarce natural resources as it supposes energy self-sufficiency, reducing dependency on fossil fuels (Kristoferson *et al*, 1985; Monteiro Alves, *et al*, 2000; Weisser, 2004; Duic *et al*, 2008). But, whereas they could usually benefit from important renewable sources of energy (from wave energy to geothermic), islands' electric energy production is still mainly based on fossil fuels (Stuart, 2006). Stuart advocates energy policies that are designed as wide and holistic visions, therefore planned for the long-term. The use of renewable energies can prevent these small economies suffering from fossil fuel market fluctuations, and are therefore a source of resilience and economic stability (García and Meisen, 2008); alternative energy production is also an opportunity to cut transport costs, and improve the efficiency of the electrical network and technological development (COM, 2009). As well, conscious of the negative effects of climate change, not benefiting from their own fossil fuel resources and sustainable energy

as a potential source of competitive advantage, islanders and their politicians are more willing to develop renewable sources of energy (Lyngen Jensen, 2000).

2.3.1.3 Tourism in small islands

The relations between island sustainability and tourism must be considered with special attention. A tourist is defined here as: someone that visits a place for a limited amount of time in his or her free time to have a different living experience (Smith, 1989, p.1). The World Tourism Organisation (WTO) acknowledges sustainable development principles and it advocates good practice in tourism related to the conservation of natural heritage. Eagles *et al* (2002) suggest that "tourism planning and development aims to take advantage of the interest shown by tourists so as to: enhance economic opportunities, protect the natural and cultural heritage, and advance the quality of life of all concerned" (p.23) (World Commission on Protected Areas). Related with tourism to natural areas is ecotourism. This modality of tourism is described by The International Ecotourism Society in 1990 as "responsible travel to natural areas, which conserves the environment and sustains the well-being of the local people". It has been shown that nature-based tourism and ecotourism can provide revenues to support local development and natural areas' conservation (Goodwin, 1995; Gössling, 1999; Balmford *et al*, 2009). Efforts to preserve natural habitats and to create a sustainable society are positively valued by eco-tourists: "promotion and marketing of the protected area can help increase visitors' awareness of the authentic values of the area" (EUROPARC, 2007).

More than that, tourism can be seen as a complement to other sectors, increasing the overall demand and production of goods and services. This relation also comprises the appropriate use of natural resources (associated with relevant training of professionals in the tourism sector) (Jacobson and Robles, 1992). But as Scheyvens (1999) stresses, local communities should be empowered in order to benefit from ecotourism activities; this is also relevant to sustaining activity in the long term, increasing its positive impact. Environmentally sensitive ecotourism activities require institutions with good planning capacity, integrating local

expectations, involving the private sector, population and participants in a project for economic, social and environmental sustainability (Koens *et al*, 2009).

In the context of small islands, McElroy and Dodds (2007) give some indication of how to develop successful and long-lasting tourism activities "acceptable to the host population and environmentally sustainable" (p.3). First of all, long-term planning needs to be "proactive and strategic" (p.3). Planning should be adaptable to environmental and market changes; increasing the resilience to shocks. In addition, McElroy and Dodds advise that the community should participate in decision-making, and locals must be well informed about the environmental issues at stake. Their third advice is that the island economy should not rely only on tourism; diversification is indeed the basis of economic robustness. Finally, the authors point out that the islanders should accept that economic growth has to be limited.

Well conducted tourism can be an alternative to the MIRAB (MIgration, Remittances, Aid and Bureaucracy) economy, often crucial in SIDS' economies (McElroy, 2006). The alternative models to MIRAB economy are the PROFIT/SITE models identified and described by Baldacchino (2006b), McElroy (2006) and Oberst and McElroy (2007). PROFIT (People (immigration), Resources, Overseas management (diplomacy), FInance and Transport), and SITE (Small (warm water) Island Tourist Economies) models differ from MIRAB in a more dynamic private sector, more creative domestic policy, and higher economic diversification. In SITE islands tourism plays a key role and it is considered to be a reliable sector to foster local economic development (McElroy, 2006). Slinger-Friedman (2009) informs on the benefits of ecotourism in Dominica Island (in the Caribbean); the positive impacts are firstly economic (employment, increase of the entrepreneurial possibilities and support of infrastructures) but the repercussions are also positive in environmental and cultural heritage conservation. A further example of this is the case of East Maui in Hawaii where tourism has stimulated the conservation of the cultural and natural heritage, benefiting the different stakeholders involved and the conservation of the community's cultural peculiarities (Cusick, 2009).

But tourism can also have a negative impact on the areas visited and the host communities. Tourism increase in peak season is a cause of potential tensions on fragile ecosystems and the seasonality of tourism is an important disturbing factor in local economies (Koenig-Lewis and Bischoff, 2005). The negative impact can also include an increase in the cost of living and overcrowding of public facilities (Tovar and Lockwood, 2008). It is important to point out that tourism is also dependent on foreign (if the tourism market is not national) economic fluctuations, therefore this volatility can also be a source of economic vulnerability (UN, 2010). Reports from international institutions and organisations refer to good tourism practices as an opportunity for the development of local communities. As the UNEP's report stresses:

> "Tourism has a major impact on local communities in tourist destinations. It can be a significant source of income and employment for local people. It can also pose a threat to an area's social fabric and its natural and cultural heritage, upon which it ultimately depends, but if it is well planned and managed it can be a force for their conservation."
>
> UNEP, 2003

Scheyvens and Momsen (2008) review the economic and environmental threats in SIDS and they address the need to consider more carefully the social impact of tourism in less developed countries; to address the inequalities derived from tourism they propose "pro-poor tourism" (p.23). May (1991) identifies the reasons of resources' damage related to tourism: "the pressure of population on land, inadequate means of transporting plentiful supplies to areas of need and land degradation itself" (p.113). When tourism occurs in less developed areas it implies the creation of structures that might not be able to adapt to environmental change, therefore care must be taken to create a stable situation, avoiding the threats linked to environmental change (May, 1991, p.113).

2.3.2 Small island developing states and sub-national island jurisdictions

SIDSs and sub-national island jurisdictions (SNIJs) present different economic and geo-strategic situations (Armstrong *et al*, 1998; Bertram, 2004; Baldacchino,

2004, 2006a and 2010; McElroy and Pearce, 2006; Baldacchino and Milne, 2006; Taglioni, 2006, Taylor and Peterson, 2011). But with the aim of analysing the problem of island development, the literature on small island developing states (SIDS) provides a relevant focus.

One argument given to differentiate SIDS from other small developing economies is: "the permanent nature of their geographical constraints and their associated extreme economic vulnerability" (Campling, 2006, p.236). Briguglio (1995) and Campling (2006) identify some economic and environmental threats to SIDS, which are a combined consequence of their small size and their isolation. The effect of their small size is a small population and consequent limited internal demand and production capacity handicapping potential economies of scale, but also a higher relative dependency on the exterior, increasing economic vulnerability. The small size is also linked to the availability of fewer resources which are also easily threatened by depletion and a poor degree of competition (this facilitates the creation of oligopolies and monopolies). Briguglio (1995) points out that smallness reduces the general level of administrative efficiency and that transport costs are increased, due to the uncertainty linked to islands' inherent characteristics. These points of view on islands confirm Hache's (1998) opinion which is that the relationship between isolation and vulnerability is a "structural constraint" to small island development.

Small island states are also more sensitive to climate change (Kelman, 2010; Kelman and West, 2009 for a critical review on the subject) and natural disasters (Briguglio, 1995; Pelling and Uitto, 2001) than other areas. Islands are seen as "more unique and more vulnerable" by Kelman and Lewis (2005, p.6), who identify higher vulnerability to natural hazards but also persistent vulnerabilities related to intermittent water and energy supply, emigration flows, low self-sufficiency, and difficulties related to the preservation of the island's heritage. In 1998 the UN General Assembly recognised that:

> "In addition to the general problems facing developing countries, island developing countries also suffer handicaps arising from the interplay of such factors as their smallness, remoteness, geographical dispersion, vulnerability to natural

> disasters, the fragility of their ecosystems, constraints in transport and communications, great distances from market centres, a highly limited internal market, lack of natural resources, weak indigenous technological capacity, the acute problem of obtaining fresh water supplies, heavy dependence on imports and a small number of commodities, depletion of non-renewable resources, migration, particularly of personnel with high-level skills, shortage of administrative personnel and heavy financial burden".
>
> UN General Assembly, 1998a

However, concerns about challenges to SIDS were also raised by the Rio Earth Summit in 1992, Chapter 17.G paragraph 123 of Agenda 21:

> "Small island developing States, and islands supporting small communities are a special case both for environment and development. They are ecologically fragile and vulnerable. Their small size, limited resources, geographic dispersion and isolation from markets, place them at a disadvantage economically and prevent economies of scale."

The Declaration of Barbados (1994), and the Barbados programme of action (BPOA), presented at the global conference on the sustainable development of small island developing states, frames the development policies that SIDS should follow. The declaration proposes a programme of action on issues related to climate change and sea-level rise, natural and environmental disasters, management of waste, coastal and marine resources, freshwater resources, land resources, tourism resources, biodiversity resources, national institutions and administrative capacity, regional institutions and technical cooperation, transport and communication, science and technology, human resources development and implementation, monitoring and review. This declaration is based on Agenda 21 and presents orientations aimed at adapting its sustainability goals in the case of SIDS. The eighth MDG (the Global partnership for development) (see Section 2.2.1) also proposes to take into consideration the special needs of SIDS.

As can be observed, there is an institutional and academic concern for the vulnerable situation of SIDS. However, by applying appropriate economic policies and strategies, islands can overcome the handicaps caused by their geographic condition (Armstrong *et al*, 1998; Armstrong and Read, 2002 and 2003). As Encontre (1999) explains:

> "In order to reduce their economic fragility and promote resilience to external shocks, small island developing states are bound to meet competitive challenges and new trading opportunities. This implies a thrust to improve their economic specialization by dealing with all factors that influence the economic structure, in particular, the intrinsic handicaps of islandness."
>
> Encontre, 1999, p.269

SNIJs represent a political alternative to SIDSs that require a specific analysis. Even if the differentiation between small nations and "highly autonomous" sub-national regions is getting unclear over time (Armstrong *et al,* 1998, p.642), it is relevant to explore the differences between SIDSs and SNIJs. Baldacchino (2004, 2006a and 2010), McElroy and Pearce (2006), Baldacchino and Milne (2006) and Taglioni (2006) observe that autonomy, especially for distant small island regions, is more a practical solution "to often formidable logistic and administrative challenges" (Baldacchino, 2006a, p.854) than the consequence of nationalist aspirations. Bertram (2004) proves that dependent islands tend to converge with their mother countries' GDP, performing better than genuinely independent island states. This is why these regions admit "autonomy without sovereignty" as "the current status of autonomy without sovereignty is seen as the best of both worlds" (Baldacchino, 2006b, p.49). These benefits are, for instance, visible in the higher rate of non-sovereign islands linked to a developed country using renewable energy (Lyngen Jensen, 2000).

The European outermost regions, which are included in the SNIJ group, are examples of the special consideration given to small islands. The European Union considers with special care the European outermost regions. Although the treaty does not specify that the European outermost regions are small island regions, all of them, apart from French Guyana, are island regions. The Treaty of Maastricht states that: "the outermost regions of the Community (the French overseas departments, Azores and Madeira and Canary Islands) suffer from major structural backwardness compounded by several phenomena (remoteness, island status, small size, difficult topography and climate, economic dependency on a few products), the permanence and combination of which severely restrain their

economic and social development". It proposes "specific measures to assist them" in order to help them reach the Community's social and economic standards.

This section has provided the opportunity to present the different factors affecting the sustainability of SIDS, and the main differences with SNIJs. SNIJs have benefited from the support of a mother country and different degrees of autonomy. This has allowed them to perform better than fully independent island states, but it is also symptomatic that small islands are dependent on external support. But this differentiation following the political status of islands does not suffice to inform in depth small islands' individual specificities. Islands present a wide variety of characteristics that require deeper insight into their different typologies.

2.3.2.1 Typologies of islands

In order to reach a correct diagnosis of each individual island case, it is important to be able to define with precision their geographies. But the classification of islands can be a very subjective exercise, as Péron observes: "an island is deemed to be small when each individual living there is aware of living within a territory circumscribed by the sea. An island is deemed to be "big" when the society in general is aware of its insularity, while individuals may be unaware or forget that they live on an island" (1993, in Taglioni, 2011, p.46). Beller *et al* (2004) refer to small islands as those islands that have an area less than or equal to 10,000km^2 and fewer than 500,000 inhabitants. This reference seems too wide; sub-categories of islands can help in understanding different situations. First of all, when references are made about islands very often they do not specify whether the region or small island state is an archipelago or a single island. The fact of being a group of islands creates challenges in logistics and intra-regional communications due to internal geographic discontinuities, while a single island region or state might be easier to manage:

> "The management of an archipelagic territory has elevated costs. The construction of a port and an airport on each island, the implementation of public services, produce disproportionate costs in relation to the existing population." Kotlok, 2005, p.69[10]

[10] Author's translation, original text: "*La gestion d'un territoire national archipélagique a un coût élevé. La construction d'un port et d'un aéroport dans chaque île, la mise en place des services publics, engendrent des coûts disproportionnés par rapport à la population desservie*" p.69.

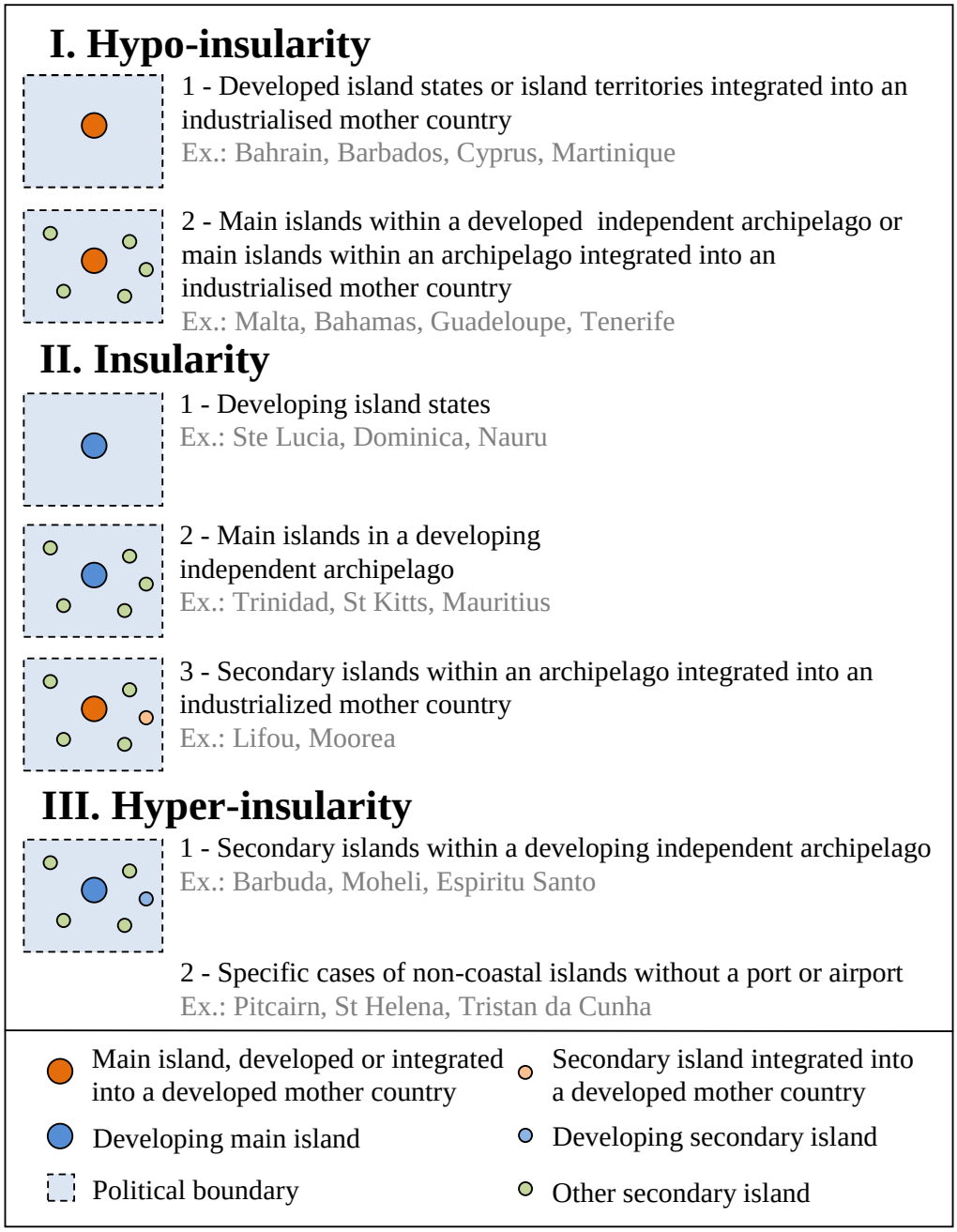
Geographic fragmentation (in the archipelagic countries) and financial constraints are seen as limiting factors for continued participative democracy processes; the geographic discontinuity challenges territorial cohesion and the logistical implementation of participative processes at the regional scale (Hirano, 2011); this handicaps the potential to implement policies that incorporate local perspectives and it might limit their acceptance by the local population. This aspect is crucial when considering sustainability matters that require modifying individual behaviours (Section 2.2.1): information campaigns on good practices or participative processes might be jeopardised by the logistic constraints found in archipelagos.

Other factors such as size and population also require more detailed differentiation. Human pressure, land use challenges and available natural resources might vary very much from one island to another even in the same region. Therefore planning and management challenges might vary considerably, policies should also be customised (or even designed specifically) in order to address each specific island's case. Beller *et al*'s classification shows here its limits as there are a large variety of cases within the proposed range. A subdivision of very small islands is relevant to refer to those islands that do not reach a certain threshold at the regional level; these islands are a periphery of the periphery. For instance, in the Azores the classification of *cohesion islands* (Santa Maria, São Jorge, Graciosa, Flores and Corvo Islands; this point is developed in Chapter 3) positively discriminates in favour of islands with specific needs; betraying the need of these sub-divisions in the region.

With the objective of distinguishing between small insular spaces, Taglioni (2006 and 2011) proposes a classification of islands from "hypo-insularity" to "hyper-insularity" (*surrinsularité* or double insularity) (Figure 2.4 taken from Taglioni, 2011, p.56). The islands in the case of "hypo-insularity" do not suffer so much from the effects of insularity as their level of development allows them to be equipped with an efficient infrastructure that links them with leading economies

or the mother country. At the other extreme of the classification lie the islands in "hyper-insularity"; these less developed islands lack efficient transport infrastructures that link them directly with the global economy. In between these categories are islands in intermediate situations: the main islands in developing states and secondary islands in developed archipelagos; their level of insularity depends on regional, economic and political factors. These cases concern challenges relevant to the study of islands and provide the general framework to undertake it, but they must nevertheless be completed by an appropriate analysis of each individual island as the "multiple interactions of heterogeneous elements" (Taglioni, 2011, p.51) might vary from one case to another. The Azorean islands are characterised following Taglioni's categories in Chapter 3: Section 3.1.1. Exploring these characteristics is crucial to understanding an important factor in the study of insularity: the special relevance of identity and islanders' identification with the place.

Figure 2.4: Typology of insularity in small insular spaces
(source: Taglioni, 2011)



2.3.3 Islands and identity

> "Geographic isolation has given birth to a genuine society who, consequently to its vision of the world has an identity of its own."[11]
>
> Burgarella-Mattei, 2003, in Kotlok, 2005, p.59

In Western culture, islands have a special attraction; they are associated with images of heaven/Eden/paradise or utopia (Ward, 1993; Connel, 2003; Kotlok, 2005; Murray, 2009). This attractiveness is probably one of the main strengths of islands that should be treasured (Baldacchino and Pleijel, 2010). Aware of this attractiveness, islanders can use their initial situation to build intentional ideals where:

> "The members become aware of such ideality and move to intentionally protect it [the unintentional ideal community] or nurture it, thus shifting from an unintentional ideal community to an intentional community."
>
> Miller, 2009, p.34

But this idyllic image is not necessarily shared by islanders themselves (Ward, 1993; Cambers, 2006). Islanders' identity, forged by centuries of "geographical separation", is considered central in these societies (Pitt, 1980, p.1054). Islands have been defined as the "quintessential physical place" in opposition to the rest of the world which is defined by movement and globalisation (Péron, 2004, p.334), Stratford (2008) also supports this idea: "(i)n an age of hyper-mobility, islands provide spatial and temporal limits, and foster strong sense of identity" (p.162). Identification with the place is indeed inherent to island populations:

> "What is unique about islands is that they, as physical entities delimited by water, may impose severe material constraints on local life while providing prospects for journeys abroad. At the same time, their territorial circumscription makes them distinguishable places of origin and, hence, possible sources of identification and belonging within wider contexts of life."
>
> Olwig, 2007, p.271

> "Islands are most fundamentally defined by the presence of often frightening and occasionally impassable bodies of water that create a sense of a place closer to the natural world and to neighbors."
>
> Conkling, 2007, p.200

[11] Author's translation, original text: " *L'isolement géographique donne naissance à une société originale qui par sa perception du monde s'est forgée une identité propre…*" p.59.

The strong identification with place can be used as a "mobilising principle" against global dysfunction and to plan opposition against unwanted situations (Hay, 2006, p.31). Thus, the more strongly a community is attached to its place, the higher is the possibility of mobilisation. Soulimant (2011) writes that island societies are characterised by a "feeling of belonging, a strong identity and the will of distancing itself from the others, a will to assert itself and to be more important" (p.43)[12], McCall (1996) points out that "islanders are particularistic" (p.76). Péron, aware of the relation of the islander with the place, discusses the limits of conventional planning when treating small islands, instead she proposed for each island an "appropriate socio-cultural plan" (2004, p.338) that respects the island's individuality and history and that is "human in character" (2004, p.338). In Péron's opinion, by respecting an island's myths and imaginaries, these locally sound plans are preserving the island's identity. Kotlok's analysis of Cape Verde case informs about the demands islanders make to be taken in consideration in decision-making process: "the island's development can only be conceived by local stakeholders who consider themselves the only individuals able to know their needs in what concerns development" (2005, p.67[13]).

From the perspective of sustainable development, the challenge is to understand each island's identity and foster the elements that can mobilise locals towards higher standards in sustainability. The policy maker, or the promoter of these initiatives, must be aware that strong identity can be positive for her or his objectives but, if the community desires not to adhere to the project, because it feels threatened by it or it just does not suit their interests, it can also be counterproductive.

In addition to the aspects related to identity and the need to develop policies adapted to the local population, islanders' strong sense of place and islands' geographical characteristics combine to produce situations where the effects of

[12] Author's translation, original text: "*Un sentiment d'appartenance à une communauté, par une identité forte, elle développe souvent une volonté de se démarquer, une manière de s'affirmer, de peser plus*" p.43.
[13] Author's translation, original text: "*Le développement de l'île ne peut être conçu que par les acteurs locaux, se considérant seuls à même de connaître leurs besoins en matière de développement*" p.67.

economic activity in the environment can be confronted in a real situation. In Depraetere's analysis of the role of Nissology to understand wider continental issues (related to the points developed in Section 2.3.1):

> "Due to the strong sense of place that they engender, islands are the ideal spaces to experience the pernicious and dysfunctional chasm between these two separate ecos [economy and ecology]. Islands magnify the schizophrenic practices of these two types of 'development'"
>
> Depraetere, 2008, p.20

McCall's proposal for some basis for nissological knowledge (1994, p.6) holds that research on islands should inform decision-makers (*height dimension*) as well as the public sphere (*width dimension*), and research should also treat in detail a wide range of subjects (*depth dimension*) and it should have a long-term perspective, thinking of future generations (*time dimension*).

The Small Islands Voice participative project, aiming at informing sustainability in islands (the initiative was supported by the UNESCO and it involved 15 island states and territories), allowed Cambers (2006) to observe that islanders show awareness about their islands' issues and the importance of adapting their economic development to the limited local resources. An illustrative example of this is the fact that the Balearic and the Canaries are two of the three regions in Spain with the greatest proportion of municipalities accepting the Aalborg Charter (Echebarria *et al*, 2004). But strong pro-environmental attitudes that can follow from this "strong sense of place" might not be directly translated into pro-environmental behaviours (Kollmuss and Agyeman, 2002, conf. Section 2.2.1). More crucially than in other places, projects aiming at an island's development rely on their assimilation of the island's identity and the acceptance of local population. This is congruent with the requirement of including at a local level "moral, ethical, cultural and behavioural dimensions of environmental issues" (Eden, 1996), in addition to technical solutions. If the promoter misses or questions the essential elements forming the local identity, islanders' affinity might be lost and individuals might not adhere to a proposal, jeopardising the process.

At least 10% of the world's population (650 million people) live on islands (Baldacchino, 2007); this alone is a strong argument for their study. But sustainability issues seem to be magnified in islands and they present powerful potential for innovative decision-making for sustainable development, therefore the impact of their study surpasses islands themselves. Small islands have been presented in this section as particular territories that can be greatly informative about global sustainability issues. Their study implies considering issues of scale and the islanders' strong relation to the place and, as allegories of the world, they combine the complexity of sustainability issues with a small and clearly bounded geography. The present thesis proposes to inform about a small island case in a participative way by means of an innovative application of a multi-criteria appraisal method (conf. Chapter 4). The following section will be dedicated to multi-criteria appraisal methods and it will develop the arguments about which is the most appropriate for the current case study.

2.4 Multi-criteria appraisal

> "The main advantage of multi-criteria models is that they make it possible to consider a large number of data, relations and objectives which are generally present in a specific real-world decision problem, so that, the decision problem at hand can be studied in a multidimensional fashion."
>
> Martinez-Alier *et al*, 1998, p.281

2.4.1 MCA methods used in deliberative and participative processes

Multiple criteria decision-making is designed to help treat complex situations where conflicting interests converge (Zionts, 1979). This combination of complexity and conflict requires non-conventional decision-making techniques that allow considering a large set of criteria. Initially multi-criteria decision-making methods were used to handle decision-making challenges in business

management; for instance the outranking ELECTRE[14] methods developed by Roy from 1968 which was later used in other fields. Another widely used outranking method was PROMETHEE[15] and its evolutions (Brans, 1982; Brans and Vincke, 1985). An outranking method consists of comparing alternatives using incommensurable attributes, and defining the preferred options for each attribute (Roy, 1991; Bouyssou, 2001).

MCA is useful in decision-making because it makes it possible to take decisions comparing different options or perspectives in spite of potential incommensurability. Decision-making considers, directly or indirectly, issues that deal with social and technical incommensurability (Munda, 2004a). Martinez-Alier *et al* (1998) understand incommensurability as "the absence of a common unit of measurement across plural values" (p.280). In 1986 Vincke advocated multi-criteria decision aid (MCDA) because these methods are more adequate than traditional monetary-based decision aid techniques such as financial analysis, cost-effectiveness analysis and cost-benefit analysis to inform complex decision-making (Romero, 1996; Department for Communities and Local Government, 2009) due to their greater flexibility and their capacity for incorporating an array of criteria.

Sustainability issues are multidimensional and often confront different interests; by making 'implicit' subjective differences more explicit (Stirling, 2006, p.97) MCA methods make possible divergences of opinions visible. The fact that MCA methodologies are multidimensional tools makes them suitable to deal with sustainability and environmental issues (Romero, 1996; Martinez-Alier *et al*, 1998; Munda, 2004a; Kiker *et al*, 2005[16]; Herath and Prato, 2006a). MCA tools have been used in environmental assessment to "attempt to solve problems with *different objectives which normally are opposed*, such as the classical example of minimizing the environment cost and at the same time maximizing the economic

[14] ELECTRE stands for: *ELimination Et Choix Traduisant la REalité* (ELimination and Choice Expressing REality).
[15] PROMETHEE stands for: Preference Ranking Organisation METHod for Enrichment Evaluations.
[16] Their paper presents a good review of different multi-criteria decision analysis used in decision-making on environmental issues.

development" (Munier, 2004, p.132). Munda (2004b) acknowledges that scientists face important challenges in political decision-making where facts are uncertain, values are in conflict, interests are important and decisions have to be taken rapidly. Uncertainty is even higher over long-term perspectives as the probability of occurrence of the variety and number of disruptive factors increases with time (e.g. the assessment of uncertainty in deliberative mapping and the influence of long-term perspectives (Davies *et al*, 2003), conf. Chapter 5: Section 5.4.1.1). But long-term visions can incorporate adaptation strategies, for instance, thinking about economic diversification to prevent the monopoly of one activity sector (the foresight scenarios presented in Section 2.2.3 are consistent with this idea). One of the aims of this study is to use (and evaluate the effectiveness of) one of the existing multi-criteria appraisal methods in a novel participative analysis process whereby a small society can reflect on long-term future development scenarios. This novel methodology is presented in Chapter 5; the following sections of the present chapter are a critical analysis of the different multi-criteria appraisal methods previously used in participative processes; from these methods one was considered to be more appropriate to help inform decision-making for sustainability in the context of small islands (conf. Chapter 4).

MCAs have been acknowledged to be fruitful methods in democratic decision-making processes: "MCDA allows for ethical considerations, incongruities and concern for the distant future in a democratic decision-making framework" (Gowdy and Erickson, 2005, p.214). Efforts to combine them with participatory processes have been undertaken (Stirling, 1998 and 2006; Antunes *et at*, 2006). As Stirling states:

> "Participatory multi-criteria appraisal offers a means to be more rigorous about the questions that are asked of analysis, the way that they are addressed, the assumptions that are made in developing answers, and the interpretations and implications of results."
>
> Stirling, 2006, p.97

Gamper and Turcanu (2007) propose an analysis of the relations between MCA and governance, they argue that MCA processes are (at least) an opportunity to inform and highlight "preferences" (p.300) which can influence the outcome of

decision-making processes. Moreover because MCA provides an opportunity to map and explore individual perspectives on the alternatives studied, it may ease the adoption of the final resolutions. Gamper and Turcanu conclude their analysis of governance and MCA with a call to increase the participation of the general public in these processes, to make them more democratic and increase their "acceptance" (2007, p.305). In the opinion of Proctor and Drechsler (2006, pp.174-176), deliberative multi-criteria methodologies are made up of seven main stages: selection of the participants to the appraisal, decision and definition of the general objectives and the options to be appraised, selection and weighting the criteria, appraising the options with the criteria (assess the options), aggregation of the scores, and finally conducting the sensitivity analysis (which consists of assessing the impact the criteria weightings have or do not have in the appraisal).

Considering the long time horizon of the appraised scenarios and the participative nature of the present research project, existing literature on multi-criteria appraisal has been studied in order to compare different methods, and find which best fitted the specific needs of the present research project in a small island context. Stagl (2007)[17] presented and analysed the state of the art in MCA methods and methodologies such as social multi-criteria evaluation (Munda, 1995 and 2004a; De Marchi *et al*, 2000; Gamboa, 2006), three-stage multi-criteria analysis (Renn, 2006), stakeholder decision/dialogue analysis (Burgess, 2000), multi-criteria mapping (Stirling, 1997; McDowall and Eames, 2006; Eames and McDowall, 2010, among others) and deliberative mapping (Burgess *et al*, 2007). Each of these appraisal methodologies was designed to fulfil certain objectives, as they require different means and logistics, and they have their own advantages and limitations. This facilitates choosing the most appropriate appraisal method for the present research project (Kiker *et al*, 2005). Table 2.2 (adapted from Stagl, 2007) summarises the potential methods that were initially considered; green shaded cells refer to eligible characteristics for each method.

[17] Deliberative monetary valuation was not considered in the thesis.

Table 2.2: Summary of six methods of sustainable valuation and appraisal (adapted from Stagl, 2007)

Methods and methodologies	Social multi-criteria evaluation	Three-stage multi-criteria analysis	Multi-criteria mapping	Deliberative mapping	Stakeholder decision analysis
Transparency	●●●	●●●	●●●●	●●●	●●●●
Public and stakeholder engagement	●●	●●	●●	●●●	●●●
Robustness	●●●	●●●	●●●	●●●	●●●
Approach to uncertainty	Fuzzy numbers; sensitivity or scenario analysis	Sensitivity or scenario analysis	Optimistic and pessimistic scores; sensitivity or scenario analysis	Optimistic and pessimistic scores; sensitivity or scenario analysis	Qualitative analysis
Outputs that the approach is good at producing	Complete or partial ranking	Complete ranking	Map of perspectives and ranking, plus discourse analysis	Map of perspectives and ranking, plus discourse analysis	Complete or partial ranking
Workshops / meetings	Yes (deliberative meetings)	Yes, can vary	No	Yes	4 workshops
Software	Yes (multi-criteria algorithms)	No	Yes, individual computer based interview (MCM Mapper and Analyst)	Yes	No
Core appraisal method	NAIADE, PROMETHE, REGIME	Group DELPHI, MAU	MCM	MCM	MCA
Use of scenarios (e.g. foresight scenarios for a small island)	No (policy options)	Technical issues	Yes	Yes	No (issues)

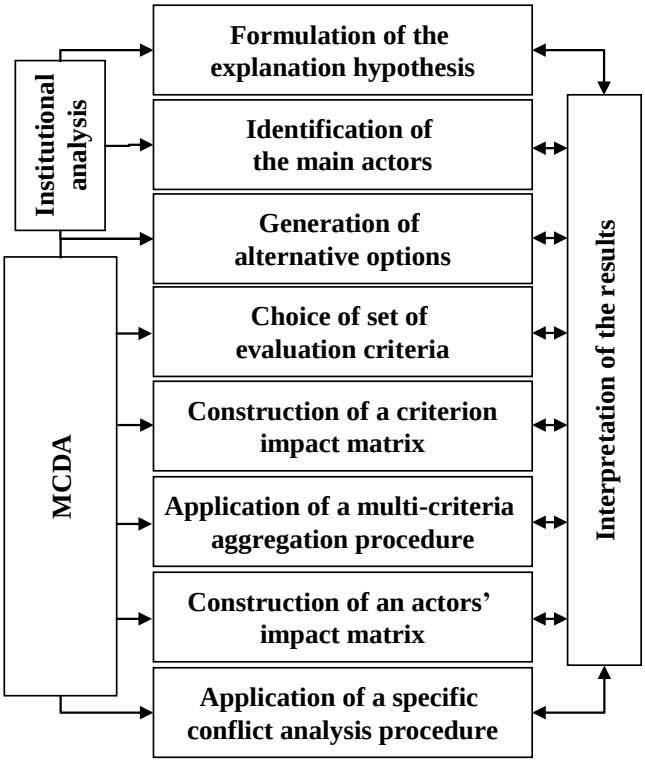
● : worst performance; ●●●● : best performance

2.4.1.1 Social-multi-criteria evaluation

Social Multi-Criteria Evaluation (SMCE) aims at analysing the different ways, or 'options', by which a policy can be achieved. This is done through the evaluation of each option by specific weighted criteria, so that the general performance of each option (impact matrix) can be known. Figure 2.5 presents a scheme of the appraisal methodology. Potential conflicts of interest are identified by the means

of an ‘equity matrix’ (study about stakeholder relations). SMCE methodology is appropriated for situations where a policy objective is already defined. Applying SMCE can be an opportunity to understand better the success factors for the implementation of the policy (social weighting of criteria and relations between stakeholders). The interesting aspects of this methodology are the intergenerational evaluation and the fact that it permits a deeper analysis of stakeholders’ relations with each other.

Figure 2.5: SMCE, scheme of the evaluation process (source: De Marchi *et al*, 2000)



The application of SMCE to study the water supply system of the city of Palermo (Italy) (De Marchi *et al*, 2000; Munda, 2006a) shows the benefits of open discussion, with the aim of increasing the transparency of the process, technical and social issues; but Stagl (2006) notices that SMCE is a less efficient method to involve the general public and stakeholders. Gamboa (2006) proposes using SMCE to complement environmental impact assessment systems. In his project on the Aysén Region (Chile), a wide range of social and economic stakeholders were involved to discuss three alternative options for the implementation of an

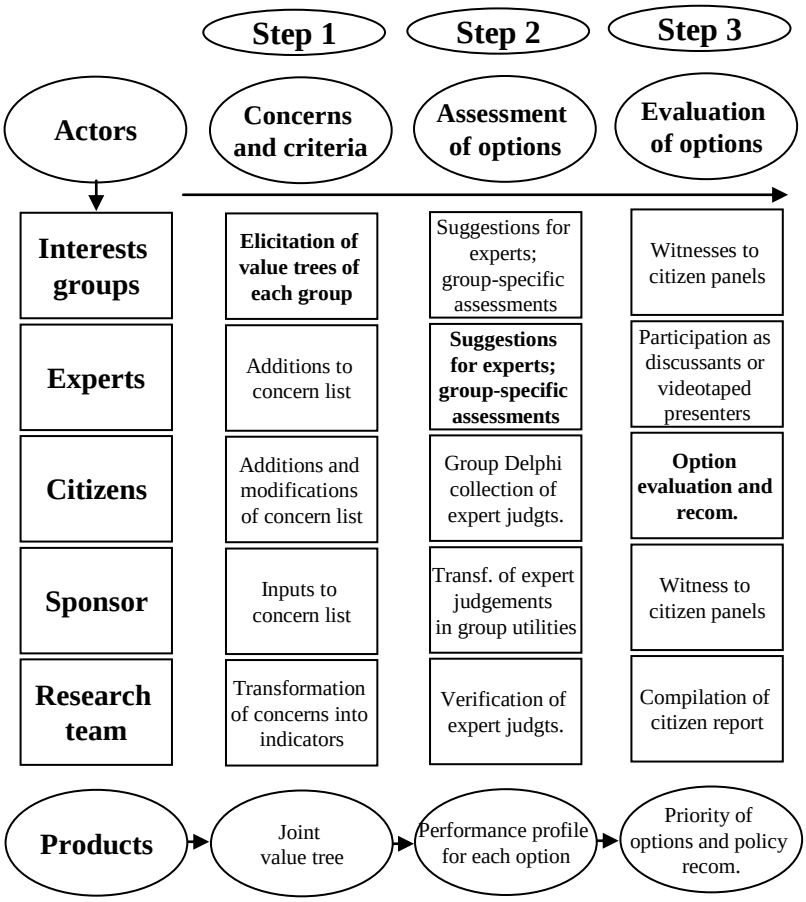
aluminium smelter plant. The multi-criteria method used for that specific case was the Novel Approach to Imprecise Assessment and Decision Environments - NAIADE - (Munda, 1995 and 2006b). This methodology allows incorporating social expectation to the technical perspectives on decision-making. Gamboa (2006) considers that SMCE can improve transparency in public decisions, but SMCE overall is considered to be less transparent than stakeholder decision analysis and MCM methods (conf. Table 2.2); this is mostly because of the complexity inherent in the core appraisal methods and the use of multi-criteria algorithms to assess the options (Stagl, 2007). SMCE is also less efficient in public and stakeholder engagement. These two drawbacks made the method ineligible to undertake the participative analysis of non-technical scenarios by lay experts in the context of small islands.

2.4.1.2 Three stage multi-criteria analysis

The three stage multi-criteria analysis (Renn *et al*, 1993; Renn, 2006) is a resource intensive appraisal methodology divided into distinct phases: (1) identifying and selecting concerns and evaluative criteria (a relevant stakeholder group chose values and criteria for option appraisal, value tree analysis - a hierarchy of the participants' concerns from the more general to more specific), (2) identifying and measuring the impact and consequences related to different policy options (the research team transformed the criteria indicators, by means of an adaptation of the group DELPHI method) and (3) conducting a discourse with randomly selected citizens as jurors in which citizens evaluate and design policy options and weight criteria. This methodology is adequate to assess issues whose impact is relatively well known (Stagl, 2007), thus this does not make it suitable for the assessment of long-term holistic visions which are characterised by uncertainty and the complexity and the unpredictability of the interactions between exogenous and endogenous factors. Three stage multi-criteria analysis is, therefore, a compartmentalised method which establishes a clear distribution of the roles between stakeholders (who select the criteria), independent experts (who manage the information and decide the indicators) and lay citizens (who evaluate the options) (conf. Figure 2.6). The three step sequence places lay citizens' participation at a late stage and gives them the role of mere juries evaluating the

available options, limiting their influence in their preliminary development. Moreover, because experts play a central role in the assessment, this method does not perform well in stakeholder engagement (conf. Table 2.2). Following the three stage multi-criteria analysis methodology would have not allowed the participative development and appraisal of foresight scenarios aimed at in the present research.

Figure 2.6: Three stage multi-criteria analysis,
elements of the model (source: Renn *et al*, 1993)



2.4.1.3 Stakeholder decision analysis

Stakeholder decision analysis (SDA) (Burgess, 2000; Clark *et al*, 1998) was initially designed to involve a series of specialised stakeholders in the deliberative assessment of sustainability issues. The first application was to inform Local Environment Agency Plans (LEAP) in the New Forest (UK), in which a series of four workshops was used as starting point in a LEAP consultation draft produced by the Environment Agency (conf. Table 2.3). The succession of four workshops

provided the opportunity to define and assess a list of issues identified by the participants themselves (with criteria also proposed by the participants). The mathematical formula underpinning the appraisal process was a guarantee of simple and understandable mathematical manipulations and consequent transparency (Clark *et al*, 1998). The methodology proved to be useful in the consensual sorting of policies to tackle local sustainability issues, it also succeeded in creating a cooperative environment of mutual understanding among the participant stakeholders, avoiding conflictive situations (Stagl, 2007).

Table 2.3: Stakeholder decision analysis, workshop tasks (Clark *et al*, 1998, p.8)

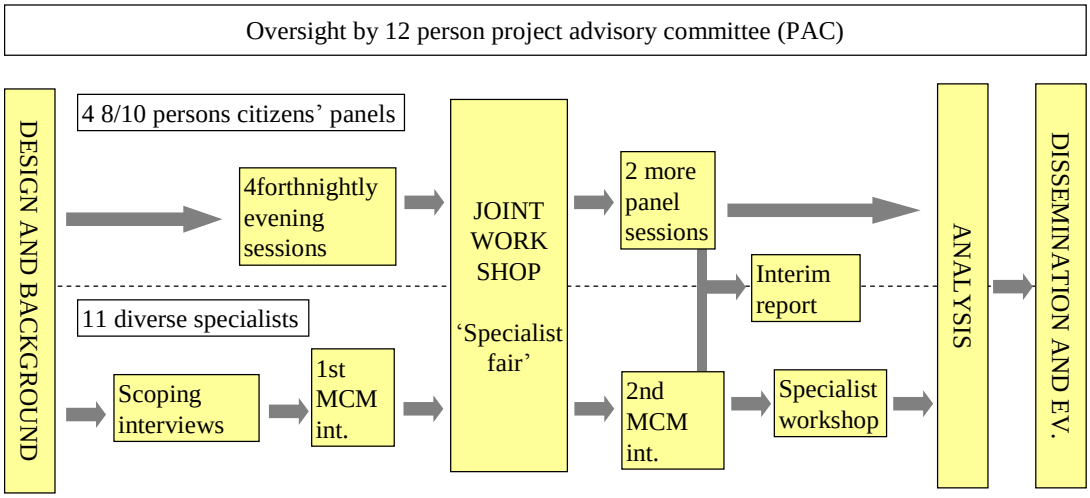
Prior to workshop 1 (individuals)	To identify costs, benefits and risks of issues in the LEAP of interest to the group members and those whom he or she was representing.
Workshop 1 (group)	To review the issues in the New forest LEAP and produce a comprehensive, inclusive list of the costs, benefits and risks associated with the issues proposed in the New Forest LEAP.
Prior to workshop 2 (individuals)	To think about criteria against which the issues in the New Forest LEAP might be assessed.
Workshop 2 (group)	To produce an inclusive list of criteria- for assessing the issues in the New Forest LEAP.
Prior to workshop 3 (individuals)	To score each criterion on the list produced in workshop 2 on a scale of 0 to 100.
Workshop 3 (group)	To evaluate the issues against the final list of 10 criteria.
Prior to workshop 4 (individuals)	To review the list of issues ranked in priority groups according to the results of the MCA.
Workshop 4 (group)	To review and agree the ranked issues list and to review the process.

The research team acknowledged the interest of opening the project to a wider public but this raised issues related to the assessment of technical and specific matters (for example, the issue of sea trout decline and the obstruction to their free passage). Stakeholder decision analysis has been developed to assess and rank specific issues identified for a particular location at a given moment, therefore it was not the most adequate method to work with holistic scenarios that do not propose an explicit and closed list of specific issues; focusing on specific issues distracts from developing an overall perspective on the alternative scenarios.

2.4.1.4 Deliberative mapping

Deliberative mapping (DM) (Davies *et al* 2003; Davies, 2006; Burgess *et al*, 2007) embeds the multi-criteria mapping (MCM) (conf. Section 2.4.1.5) method into a larger participative process involving specialists and small groups of lay citizens who have access to the same information. Deliberative mapping methodology enhances strong participation of citizens and uses a large variety of strategies: interviews, group discussions, quantitative appraisal and a joint workshop (conf. Figure 2.7). MCM interviews with specialists and lay citizens are conducted to appraise the performance of the existing options (Davies *et al*, 2003). This phase is followed by a joint workshop with lay citizens after which, specialists might modify the appraisal criteria. The process ends with a final specialists' workshop aiming at analysing the findings and evaluating the process.

Figure 2.7: Deliberative mapping
(source: Davies *et al*, 2003)



Combining an MCM exercise with a participatory technique for setting up selected criteria strengthens the process, and makes it more easily accepted by society. Burgess *et al* (2007) conclude that the DM process can help supply more informed, "technically robust" and socially acceptable policy outcomes (p.319). But DM's research team (Davies *et al*, 2003) recognised the possibility of simplifying the methodology (the project's budget was of £200,000) "scaling (it) down" (p.205). For instance, it was admitted that the second specialists' workshop was redundant. Therefore, although a success overall, DM was acknowledged to be a complex and laborious procedure. Moreover Stagl (Table 2.2) scores DM

lower than MCM in transparency criterion. As DM uses an MCM appraisal tool it should maintain similar levels of transparency, but the DM process involving parallel citizen panels and interviews with specialists reduced its overall transparency. From this perspective an alternative process involving MCM should aspire to higher standards of transparency than DM, while maintaining similar levels of public and stakeholder involvement. As well, DM was used in technical issues that justified specific learning on the subject in question, mostly for lay citizens' panels. Because the appraisal of preferred futures is not intended as a technical issue, the methodology used for the present case study would not need such follow-up. The innovative methodology developed in the present research tackles the shortcomings of DM methodology and it proposes a more adequate application of MCM method for the specific analysis of non-technical foresight scenarios.

2.4.1.5 Multi-criteria mapping

The multi-criteria mapping (MCM) method was developed by Stirling and colleagues to address gaps in environmental appraisal. Stirling (1997) observes that appraisal situations imply incapacity to predict the future, a difficulty in understanding natural and social facts, the existence of different alternatives for the same goal and finally a variability of perspectives. As a consequence "there is no uniquely 'rational' way to resolve contradictory perspectives, divergent values or conflicts of interest" (Stirling, 1997, p.190). In the light of this, MCM acknowledges these limitations.

MCM has been used in the appraisal of scenarios of possible futures previously developed by a team of specialists, but these scenarios treated rather technical issues (such as genetically modified crops, the appraisal of hydrogen alternatives, obesity policy options and the assessment of organ transplant options) (Stirling and Mayer, 1999; Stirling and Mayer, 2000; Yearley, 2001; Stirling and Mayer, 2001; Mayer and Stirling, 2002; Davies *et al*, 2003; Horlick-Jones *et al*, 2004; McDowall and Eames, 2006; McDowall and Eames, 2007; Stirling *et al*, 2007; Eames and McDowall, 2010). MCM appraisal's starting point is the personal vision of every interviewee, and their inherent subjectivity; the method captures

each interviewee's perception of reality. By means of graphs (also called *maps*) the method renders possible the transmission of each participant's perception of reality and it allows identifying individuals' sensibility in relation to uncertainty and risk. The approach is realistic as it does not consist of an optimisation of a variable but an appraisal of different criteria for different options, which fits in better with reality: "the approach is based on the understanding that there is not necessarily a single 'best' solution" (McDowall and Eames, 2006, p.13). In addition, the methodology enables a large variety of appraisal methods as the stakeholders are free to use the appraisal techniques they find better adapted for every criterion (Stirling, 1997).

The benefits of using MCM come in part from an easy to understand additive mathematical formula that informs the full process (Stirling, 1997). MCM's mathematical simplicity avoids the complexity of other appraisal methods (e.g. PROMETHE, ELECTRE), and, as with SDA, enables transparency of the process (Clark *et al*, 1998). A basic equation, Equation [1], underpins the appraisal process: r_i refers to the performance of an option (scenario) called i. This performance is the function of the sum of the scores of the option under a weighted (W_c) criterion (S_{ic}).

$$\boxed{r_i = \Sigma_c S_{ic}.W_c} \qquad [1]$$

r_i: multi-criteria performance rank of option i.
S_{ic}: score of option i under criterion c.
W_c: weight of criterion c.
(Stirling, 1997, p.193)

This relative technical simplicity is crucial in a participative process because potential lay stakeholder and citizen participants should not be overwhelmed by the tools used. The inclusiveness and subsequent transparency permitted by this technical simplicity is congruent with environmental justice objectives (Agyeman *et al*, 2002, conf. Section 2.2.3). Furthermore, MCM produces a visual *map* of how the different options perform. These graphic representations support the assessment but they are also a strong tool for displaying results, thus facilitating further disclosure among participants and the interested public. This characteristic follows the recommendation for increasing community use of MCDA tools by

providing useful graphic representations that help inform the concerned population (Herath and Prato, 2006b).

2.5 Summary

In this literature review it has been shown that sustainability is a much debated term (Jabareen, 2004; Luke, 2005; Counsell and Haughton, 2006; Krueger and Gibbs, 2007; UN, 2010) which involves a triple economic, environmental and social objective. While the definition given by the World Commission on Environment and Development is accepted as a general approach, real implementations are not so easily found. This might be explained because sustainability requires deep modifications in lifestyles (Haughton, 1999) which encounter multiple barriers (Kollmus and Agyeman, 2002). Therefore sustainable practices tend to be marginal and adopted only by a minority of individuals (Dobson, 2007). These barriers also explain why environmental awareness is not sufficient to develop more sustainable behaviours (Kollmus and Agyeman, 2002). In this context the local scale seems to be the most appropriate way to approach sustainability issues.

With LA21, the UN promotes local initiatives for sustainability. The small scale tends to ease the understanding of sustainability issues because of the proximity to the issues (Haughton and Naylor, 2008; Fidélis and Moreno Pires, 2009). The requirement of considering small scales is especially true in the case of small islands. Island characteristics, which involve smallness and isolation (Briguglio, 1995; Read, 2001; Campling, 2006), a quest for self-sufficiency (Kristoferson *et al*, 1985; Lyngen Jensen, 2000; Monteiro Alves, *et al*, 2000; Weisser, 2004; Campling, 2006; Duic *et al*, 2008; García and Meisen, 2008), and scarcity of natural resources (Briguglio, 1995; Campling, 2006) help thinking about them as potential models of the world where innovative strategies for sustainability can be undertaken (Mead, 1976; Depraetere, 1991 and 2008). Because island societies are "particularistic" (McCall, 1996, p.76) both the process of policy-making and the policies themselves must consider local characteristics and expectations. In this sense small islands require adapted and customised policies respectful of

their social uniqueness (Péron, 2004) while also being aware of their economic and environmental characteristics; which are generally associated with vulnerability (Campling, 2006). Indeed, it has also been accepted that decision-making in this geographical context would benefit from not considering small islands as a homogeneous group, but to explore in depth the existing subgroups presented by Péron (Taglioni, 2011) and to define an adapted policy for each island.

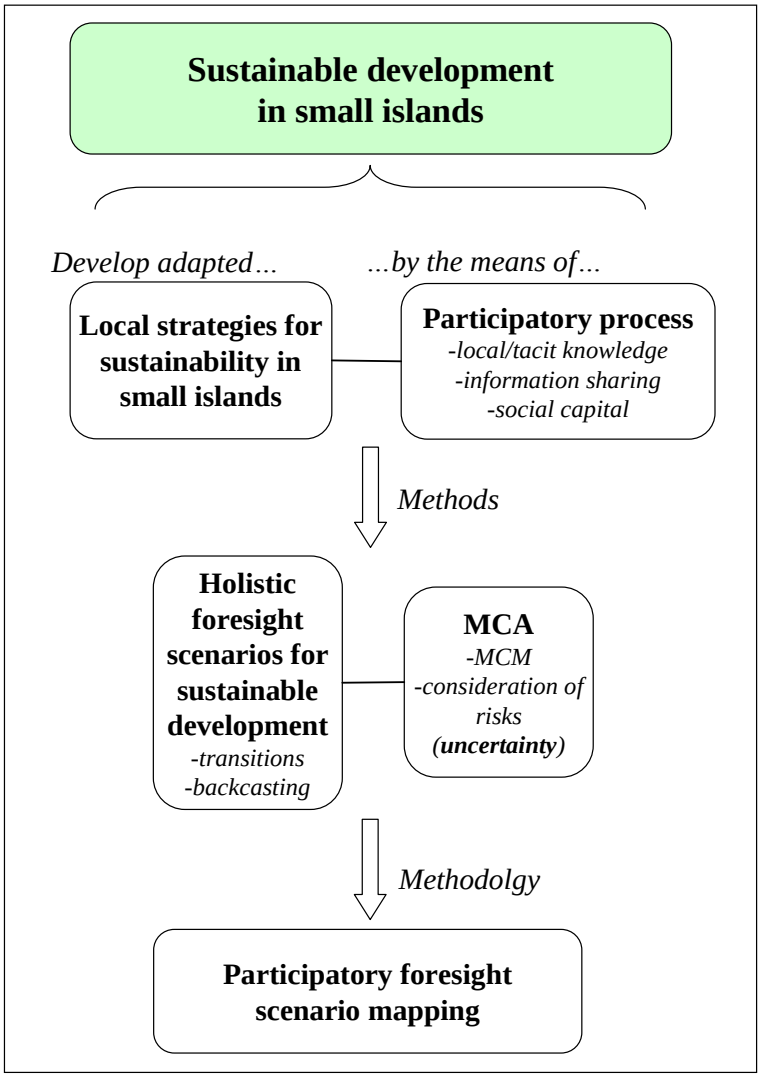
As well, island characteristics impose an integrated vision; this point demands a holistic understanding of what the islands are and what they can become in the future. The approach of integrated visions can be adopted by means of holistic foresight scenarios, which provide opportunities to steer the transition to sustainability (Voss *et al*, 2006; Eames and Egmose, 2011; Vergragt and Quist, 2011). This approach helps to address the limits observed in LA21 processes which include the difficulties they have in overcoming decision-making from a short-term perspective (Fidélis and Moreno Pires, 2009; Evans and Theobald, 2003), and the tendency to limit the impact of the policies for sustainability, thus favouring the continuity of unsustainable practices (Selman, 2000; Clark and Netherwood, 1999; Eckerberg and Forsberg, 1998; Gram-Hanssen, 2000). Using scenarios as the main theme of the process allows creating a decision-making process that works as the "thematic model" (p.73) identified by Freeman *et al* (1996) in LA21 processes. The thematic model in LA21 processes is considered to be more effective in fostering 'base-to-top' contributions and increasing the sense of ownership among the involved stakeholders. These foresight scenarios can be used as effective tools to involve local populations in the development and the assessment of their preferred futures without involving the use of more complex techniques (even if the combination of hard and soft methods is enabled within foresight futures processes) (Berkhout and Hertin, 2002). Moreover, non-technical foresight scenarios can be developed without being considered by lay citizens and non-specialised stakeholders as excluding processes, therefore using these tools is congruent with environmental justice principles (Agyeman *et al*, 2002; Agyeman and Evans, 2004). In addition to this, analysing foresight scenarios enables reflection on the required transitions to reach these scenarios by

the means of implicit or explicit backcasting exercises (Quist and Vergragt, 2006; Vergragt and Quist, 2011). In the case of small islands this approach makes especial sense: locally developed scenarios include the local populations' unique identity and expectations. It is also an opportunity to understand what islanders' expectations for sustainability are; therefore it can, for instance, inform the debate about weak sustainable development and strong sustainable development from a lay perspective or help to point out specific sustainability issues peculiar to a particular island.

Figure 2.8 schematizes the conceptual framework that underpins the present research. The research considers initially the geographical and socio-economic characteristics of small islands. These characteristics invite to develop local strategies adapted to each individual island, to define these objectives participatory processes should be implemented in order to consider local knowledge but also to promote information sharing among the participant stakehdolders. The participatory process should consider how the existing local social capital can affect the process and the transition towards sustainability but also if it can be an opportunity to strengthen the exisiting social capital. Considering these characteristics two main methods were decided to inform local transition: the development of foresight scenarios and the multi-criteria appraisal of the alternative scenarios. With the objective of increasing community acceptance and sense of ownership of the outcomes of the process both methods should be undertaken in a participatory way. Coupled with foresight scenarios, multi-criteria appraisal (MCA) is a relevant method to study policies for sustainability in a participative way (Romero, 1996; Martinez-Alier *et al*, 1998; Munda, 2004a; Kiker *et al*, 2005; Herath and Prato, 2006a). These appraisal methods allow involving a wide variety of decision-makers while including multiple criteria in the systematic assessment of a series of alternative options. Given the difficulty of defining sustainability objectives and considering the geographic context of islands, it is relevant to assess how an MCA method (in this case MCM (Stirling, 1997; McDowall and Eames, 2006; Eames and McDowall, 2010)) can be embedded in a participative process to study a small island's sustainable future by means of foresight scenarios. The novel

methodology proposed to fulfil this aim, participative foresight scenario mapping, is presented in Chapter 4.

Figure 2.8: Conceptual framework



Chapter 3:
Background of case study area: Flores Island

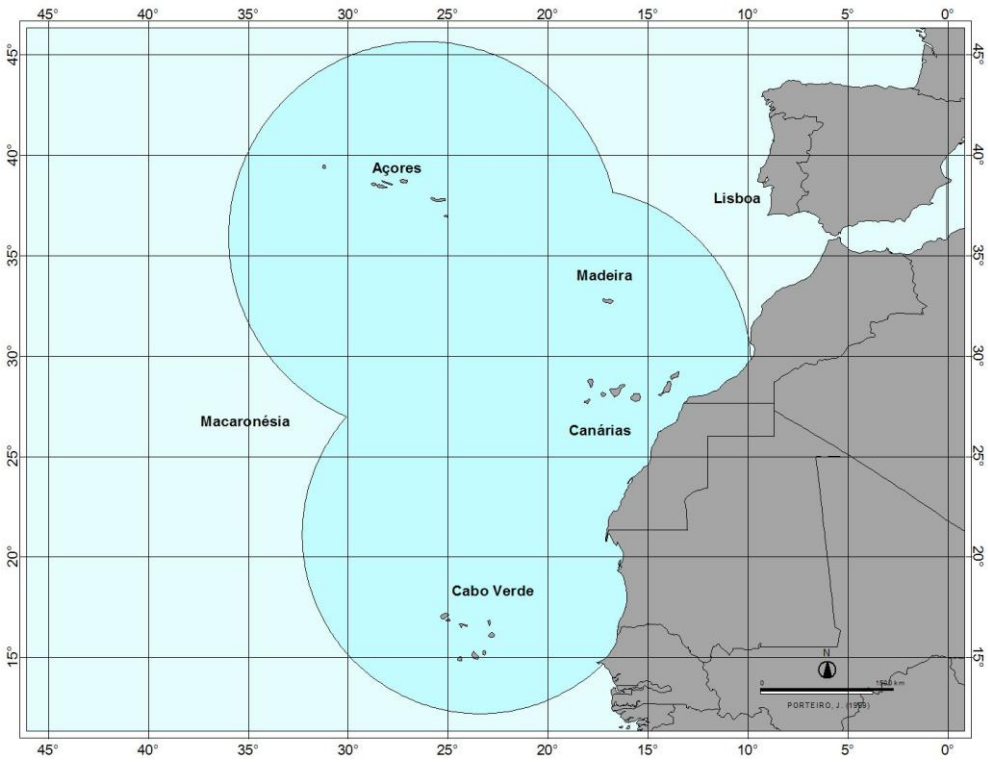
Santa Cruz das Flores.

3 Background of case study area: Flores Island

3.1 General data

Located in the Macaronesian Biogeographic Region (conf. Figure 3.1), the Azorean islands are a sub-tropical[18] scattered archipelago composed of nine islands. The Azores are distributed into three distinctive *groups* (Table 3.1 and Figure 3.2). The Azorean Western group, which includes Flores Island, is the most distant to the European mainland and therefore the most isolated in the archipelago.

Figure 3.1: Macaronesian Biogeographic Region
(source: Calado *et al*, 2007)



[18] The sub-tropical weather and the stabilizing influence of the ocean make that climate change does not seem to have a decisive impact on the Archipelago in the future. The European Climate Adaptation Platform estimated that temperatures will only increase in the order of 1ºC to 2ºC in the Azores and changes in the rainfall are not seen as relevant impact (Climate-Adapt, 2012).

Table 3.1: The Azorean islands and their resident population in 2011 (*SREA*, Census 2011, preliminary results)

Group	Island	Resident population
Eastern group	São Miguel	137,699
	Santa Maria*	5,547
Central group	Terceira	56,062
	Graciosa*	4,393
	São Jorge*	8,998
	Pico	14,144
	Faial	15,038
Western group	Flores*	3,791
	Corvo*	430
Azorean autonomous region		246,102

*: *cohesion islands*

Flores Island (39°31'28"N, 31°07'27"W) has an area of 141.7km^2, 17km long and 12.5km wide (Figures 3.2 and 3.3), its highest point, Morro Alto, is 914m high. The island, more precisely the inhabited Monchique Islet, is the most westerly point in Europe. Flores is divided into two councils, Lajes das Flores and Santa Cruz das Flores. Their estimated population in 2011 was of 1,503 and 2,288 inhabitants respectively, 1.5% of the total Azorean resident population. The island has the second lowest population density in the archipelago, 26.7 inhabitants/km^2 in 2009 (*SREA*, 2011).

Figure 3.2: The Azores (source: University of the Azores' Geographic Information and Land Planning Research Centre (2010))

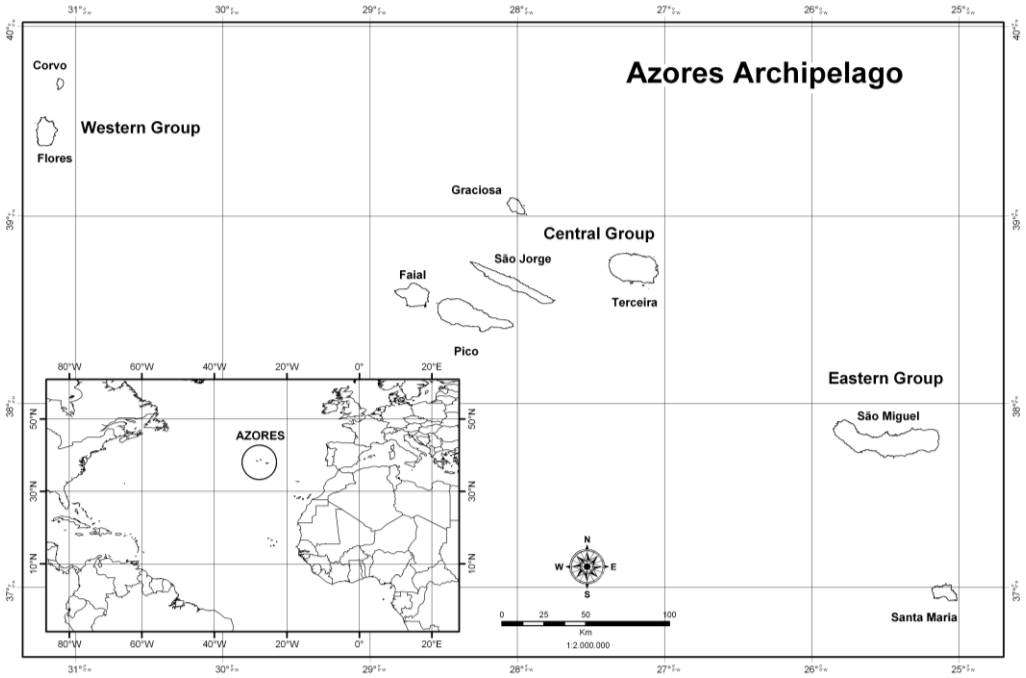
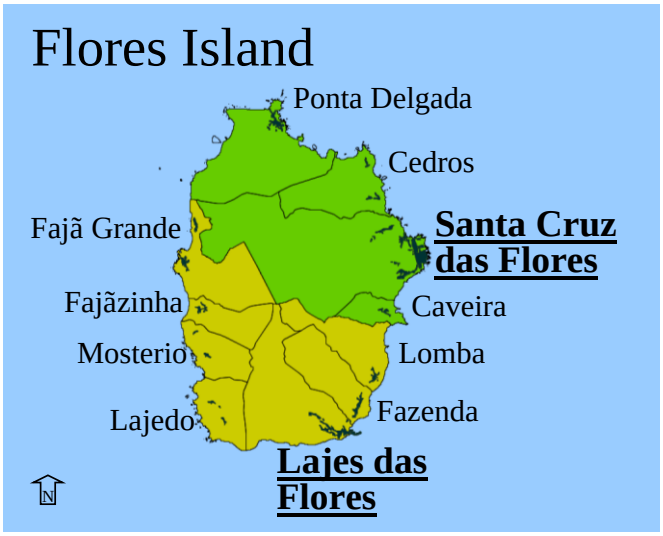


Figure 3.3: Flores Island, the grey shades represent inhabited areas
(source: own elaboration from University of the Azores data)



When the Portuguese discovered the Azores in 1431 the Archipelago was uninhabited. There is however some theories supporting that the Azores might have been known and visited by Carthaginians, Phoenicians and that they had already been described in the 12th century. But the existence of a pre-Portuguese population has never been confirmed (Babcock, 1918).

Flores and Corvo Islands were the last Azorean islands to be (re)discovered by the Portuguese. The exact date is not known but the first sighting of the island was reported in 1452 by Diogo de Teive. The name given to the island, *Flores*, meaning flowers in English, was inspired by the abundance of a yellow flower, the Seaside Goldenrod (*Solidago sempervirens*), which was blooming when the island was discovered. The first stable human settlement was in the 16th century, farmers from mainland Portugal started producing wheat, barley, corn, and vegetables, as well as growing woad (*Isatis tinctoria*) and orchella weed (*Roccella tinctoria*) for the production of pigments. The products exported from the island were: oil from sperm whales, honey, wood from native cedars, butter, lemons and oranges, smoked meat, and to a lesser extent, ceramics. Later on during the 17th century, the island's economy was supported by the presence of American whale hunters. In spite of this activity the island has suffered over the centuries from isolation and institutional abandonment. In the 20th century the island benefited from agriculture and fishery development, the construction of a port and an airport

and the presence of a logistic French telemetric station aiming at providing logistical support for French ballistic missiles monitoring (an average of 20 French soldiers worked in the base from 1966 to 1993, year of its closure). This partnership, the French-Portuguese agreement (*acordo Luso-Francês*), signed in 1964 became an opportunity for Flores Island not only to be less depended on sea transport (construction of the airport), but also to improve some of its basic infrastructures (construction of one road and one hydroelectric power station), it is acknowledged that "this agreement was, the greatest leap forwards for Flores in the direction of progress, leaving behind the lethargy of the past, it was the aerial embrace of the other islands in the archipelago, and, consequently, the world" (de Monterey, 1979, p104, author's translation). Therefore the military base staff friendly cohabitation with the local community helped to compensate for some of the island's historic isolation and backwardness. Sperm whale hunting gained importance on the island at the end of the first half of 20th century with the construction of the whale factory (*Fábrica da baleia*) in de *Boqueirão* harbour in Santa Cruz das Flores. However, because of competition with synthetic products that replaced the derivates from sperm whales, and above all the UN moratorium on whale hunting, the last whale was hunted at the end of the 1980s. Tourism is considered to be the most promising economic sector for future development (Section 3.1.3).

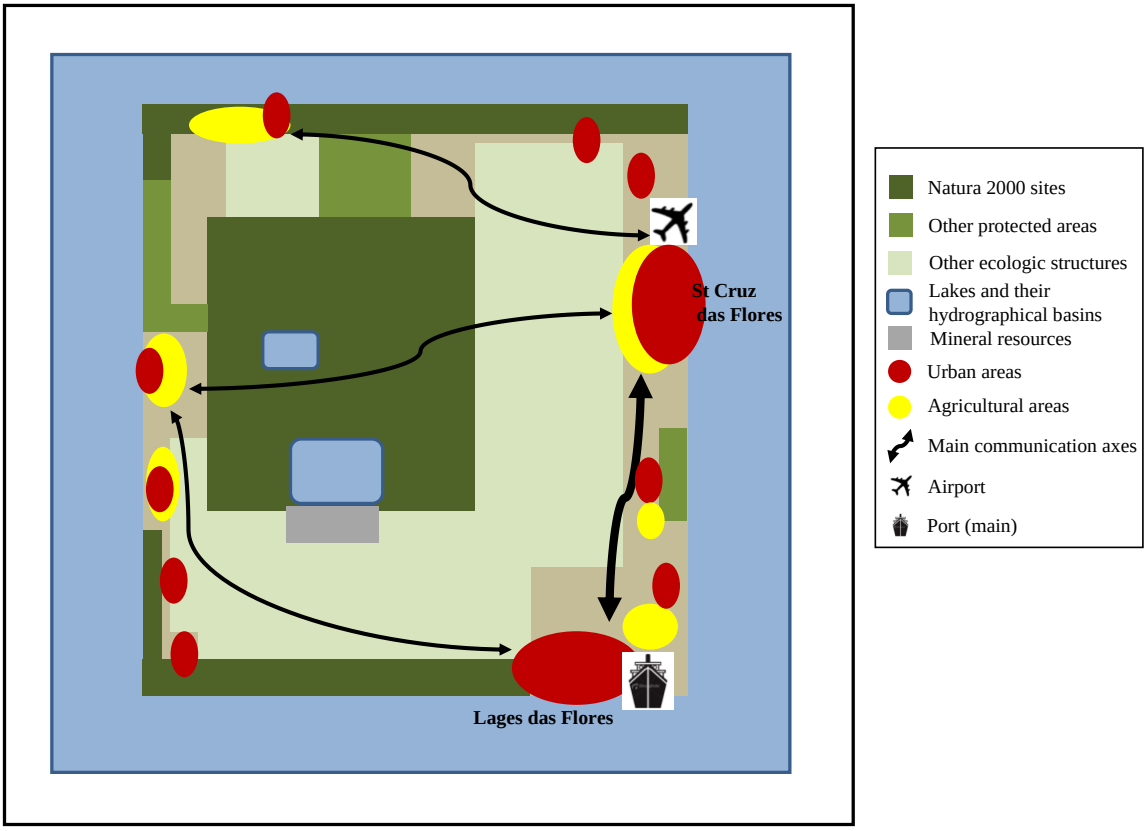
3.1.1 Flores Island geography and human settlement

In spite of the recent human occupation, with Portuguese discovery and appropriation in 1431, and institutional efforts to guarantee the equality of services between the islands, due to the range of islands' size and inhabitants the Azores are composed of a wide variety of islands. The most populated islands (Faial, Terceira and São Miguel) are directly linked by plane or boat with the Portuguese mainland, other European countries and even the United States and Canada, but the smallest do not benefit from the same infrastructures and suffer more from the effects of insularity (Flores, Corvo, Graciosa, Pico, São Jorge and Santa Maria). Considering Taglioni's classification (2006 and 2011) (Figure 2.4) there are two, and even three, categories of islands in the Azores. São Miguel (and

to a lesser extend Terceira and Horta) are in a situation of "hypo-insularity", whereas the other islands correspond to the group of islands in a situation of "insularity" as they are "secondary islands within an archipelago integrated into an industrialized mother country" (Taglioni, 2011, p.56). But this classification can be questioned as Terceira and Horta Islands can be considered as the real secondary islands (thus in situation of "insularity") and the less developed islands that do not have necessarily permanent direct communication with São Miguel Island can be considered in a situation of "hyper-insularity" (this is especially relevant for Flores and Corvo Islands).

Like the other Azorean islands, the economic activity (urban areas, communication structures, agriculture and industries) is concentrated at the coast (Figure 3.4 represents schematically the distribution of activities on the island). As these coasts represent unique ecosystems, human activity and settlement must take into account the presence of protected areas, in order to preserve an easily degraded coast line (Figure 3.5) (conf. Chapter 2: Section 2.3.1.1 for references to the challenge of coastline management on islands).

Figure 3.4: Flores' schematic structure (own elaboration)



In Flores inland one finds agricultural areas and what the *PROTA* (Regional Territory Planning for the Azorean Region, conf. Section 3.3) labels "other ecological structures" (commonly farming activities such as cattle farming and timber production forests) (Figure 3.5). The centre of the island, around the highest point, is dominated by a nucleus of protected natural ecosystems where the richest habitats and volcanic lakes are found (Figure 3.7). Paradoxically there is also a polemic open dump that is going to be sealed in a near future[19] (Figure 3.8).

Figure 3.5: Human settlement in the coastal area
(Santa Cruz das Flores) (source: author)

Figure 3.6: Inland grazing lands
(Lajes das Flores) (source: author)

[19] http://ailhadasflores.blogspot.com.es/2012/09/lixeiras-tem-os-dias-contados.html

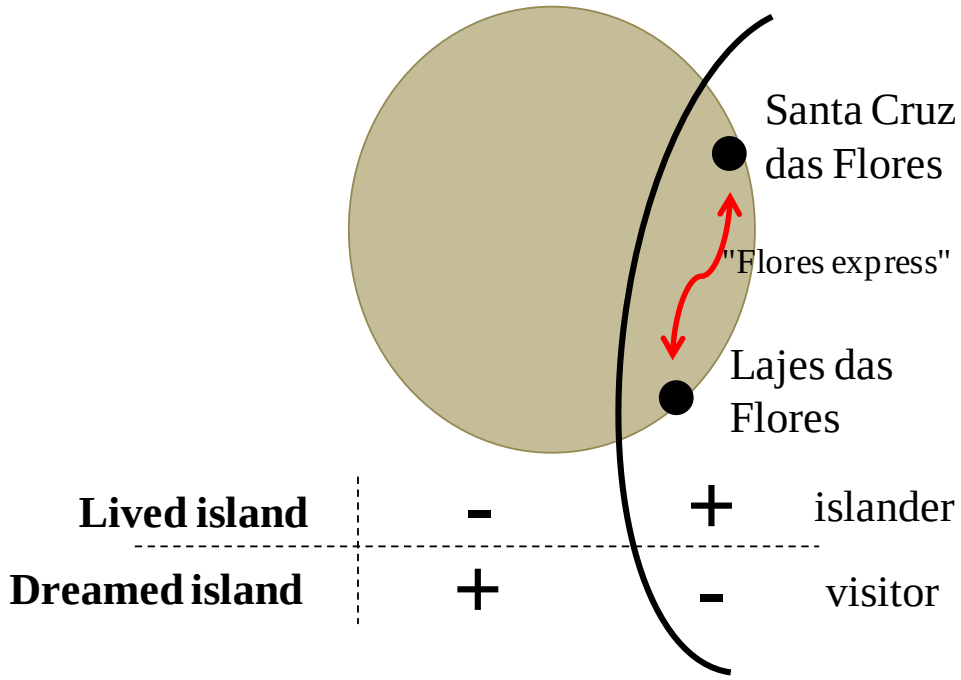
Figure 3.7: Central area with volcanic lake
(Lagoa Branca) (source: author)

Figure 3.8: Open dump
(Lajes das Flores) (source: author)

A doctoral thesis on, among other islands (in the Azores Santa Maria and Pico Islands, the Inner Hebrides in Scotland and the Kerkennah archipelago in Tunisia), Flores Island (Soulimant, 2011), proposes the existing paradox between the "lived island" and the "dreamed island". The lived island is the one that links the islanders with 'modernity', where services and goods can be purchased, employment (mostly tertiary sector) and the gateways to leave or enter the island are found there (Figure 3.5 is representative of this lived island: in the same picture we can see the airport, the local sports hall, numerous houses, and in the

forefront a warehouse of construction material). The lived island is rather urban, the main communication axis, called “Flores express” by Soulimant, links the two heads of councils. In contrast, the dreamed island is rural and lacks the commodities (health care, education, transport, trade…) available in the lived island (Figures 3.6 and 3.7 are illustrative of the dreamed island, but also the smaller parishes in the west coast, conf. Figure 3.3). The dreamed island is mostly valued by visitors and it is used by locals for farming activities or their own leisure.

Figure 3.9: The paradox of islanders divided between the lived and the dreamed island (adapted from Soulimant, 2011, p.379)



Because of its isolation, Flores has been named the *European Far West*, this adventurous image corresponds to the dreamed island, but it is in part loathed by locals as it means to them backwardness and deprivation. But *both islands* are necessary as they produce the commodities required in Flores: whereas man-made capital is found on the lived island, nature-made capital (ecosystem services) is mostly reliant on the preservation of a pristine dreamed island. In fact, the traditional human settlement model centred on the island’s East coast, and the actual nature conservation policies inclined to preserve the inland and the inaccessible coastlines (Natura2000 sites, Figure 3.13), have tended to underline

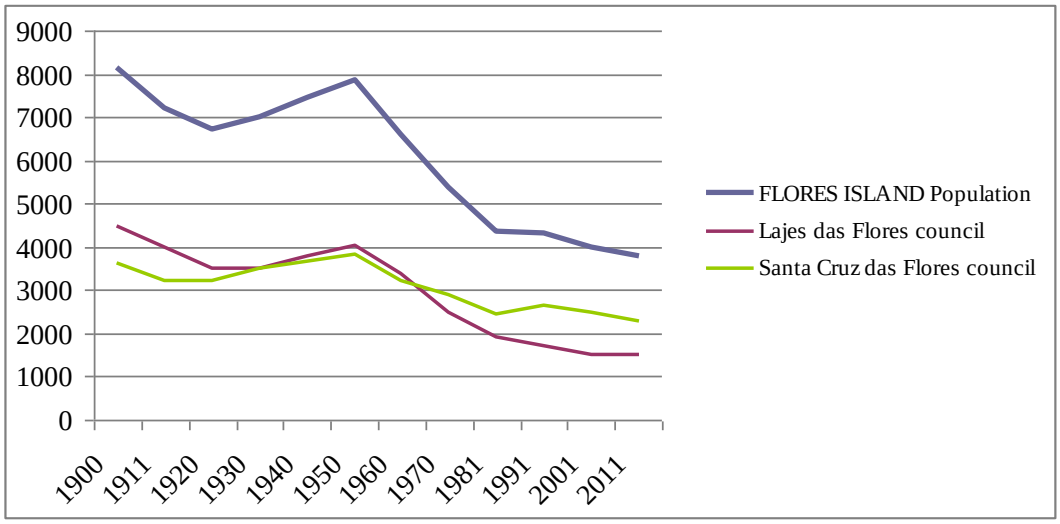
this dichotomy. Flores was declared Biosphere Reserve the 26th of May 2009, this declaration is an opportunity to see and plan the island as a whole where human and natural spaces are understood as closely interrelated. Evans (2007) gives key insights in how planning should be undertaken to improve conventional conservation planning: "on the level of lived experience, it prompts us to ask whether new relationships can be forged between humans and nonhumans based on cohabiting, or what has been termed "conviviality" […]. On the institutional level, it suggests the possibility of reorganizing systems of administrative control to produce spaces that are less segregated" (p.259). "Conviviality" is seen by Hinchliffe and Whatmore (2006) as: "a political project that is concerned with a more broadly conceived accommodation of difference, better attuned to the comings and goings of the multiplicity of more-than-human inhabitants that make themselves at home in the city than conventional political accounts. Again, our attempt to formulate such a political project here draws on our research involvements in the activities of living cities" (p.125). Although concerning urban areas Evans' idea of conservation planning remains relevant to explain the need of overcoming the existing dichotomy. More specifically islanders' appraisal should comprehend the lived and the dreamed island and should value their relationships. One example is the touristic potential of the *dreamed* island that can benefit the *lived* island but, for this to happen, locals must be conscious of the values and potential and they must understand how to preserve it. Flores' dichotomy is a clear example of the need to re-think the island and to understand the relation locals have with the "dreamed island" and to increase locals' awareness towards the need to preserve and value it.

3.1.2 Population

The island, along with the rest of the archipelago, has experienced a decrease in the population since the 1950s (mostly explained by emigration to the United States and Canada from the 1950s to the 1970s). This trend changed at the beginning of the 21st century when a reduction of the population loss can be observed (Figure 3.10). As mentioned above population density is one of the lowest in the archipelago. Population is mainly located in two parishes: Santa

Cruz das Flores and Lajes das Flores (they contain almost 60% of the island population (*SREA*, Census 2011)).

Figure 3.10: Flores Island population from 1900 to 2011
(data source: *SREA*, 2011)



Illiteracy in 2001 was 7.6%, lower than the Azorean average (9.4%), but only 5.4% of the resident population had a higher qualification than the equivalent of A-levels. Scarcity of educated people, affecting the quality of the human capital, can be seen as a challenge for the application of policies and the implementation of participatory projects for the island's development. The literature review (Chapter 2: Section 2.2.2.2) has already explored this from the perspective of the *keyness* of building strong social capital. Even if almost 70% of the population are registered as tertiary sector employees (data from 2008), a significant portion of the population supplement their income with cattle farming activity[20]. This is an important factor to consider when analysing the island's economic structure and the socio-economic importance of farming activity.

[20] Only five people were effectively registered as farmers in 2008 (considering farming as their main activity).

3.1.3 Tourism activity in the Azores and Flores Island

3.1.3.1 Tourism in the Azores

Illustrating the importance and potential of tourism in the economy, the Azores were considered by National Geographic Traveller, in the magazine article '111 islands' published in 2007, as the second best-rated destination islands in the world. Tourism impact in the Azores is the lowest in the Macaronesian region (Azores, Canary Islands and Madeira); in 2005 the number of tourists per kilometre square equalled 1.47[21]. In the Canary Islands the same data was much higher: 46.09 tourists per kilometre square, in Madeira the tourism pressure, with 19.04 tourists per kilometre square, was also high. A low tourism pressure suggests less pressure on the territory and less environmental impact. However the environmental impact also depends on the eco-system's sensitivity.

In comparison to other archipelagos tourism is a relatively recent industry in the Azores. Following Royles classification of island tourism (Royles, 2009), the Azores (and even more strongly Flores) are 'entry' islands: it is a remote region where tourism has started to develop only recently, and it is rather oriented towards a niche market. The islands classified as 'mainland' islands by Royles are those that are closer to the demand and that often present a rather mass tourism model. Locals' perceptions of tourism are thus important to understand the potential of growth without creating animosity amongst the population. A report on the Azoreans' reaction to tourism (*SREA*, 2005) informed that residents agreed that: "tourism is good for the Azores, it stimulates culture and handicraft, it creates employment, it employs young people, it creates new services" and disagreed with negative impacts: "(tourism) does not harm the environment, it does not cause natural resources scarcity, it does not limit locals' access to leisure areas, it does not harm local moral standards"[22] (p.21). Following Ap and Crompton's (1993) classification, the Azorean population is in an "embracement" stage, meaning that there is a positive perception of tourism and its impacts. The other levels proposed by Ap and Crompton are: "tolerance", "adjustment" and

[21] The region received an average of 346,694 tourists per year (*Sistema de Indicadores de Sustentabilidade do Turismo da Macaronésia 2000-2005*, 2006).
[22] Author's translation.

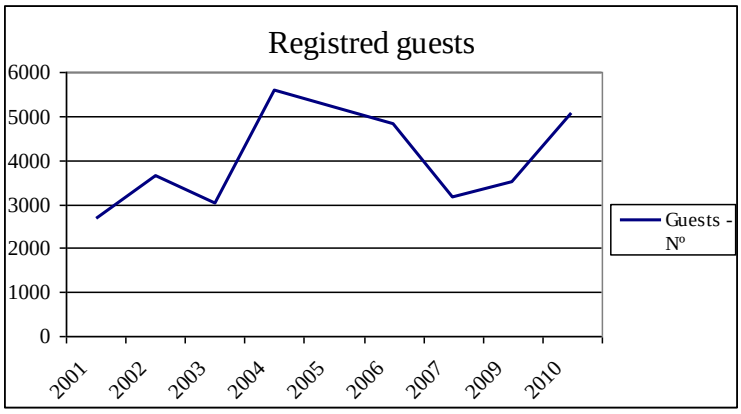
"withdrawal"; all of them referring to lower levels of acceptance than "embracement". This might be due to the low number of tourists and the type of tourists, "explorer", close to the ecotourism model. Smith describes the "explorer" type of tourist as those that are looking to learn and discover new things, their numbers are 'very limited' and they 'fully accept' local norms. Due to their behaviour and numbers their impact is the lowest in Smith's scale (Smith, 1989, p.36). This report brings some light on which kind of tourism is preferred by the Azoreans, as respecting community expectations' is crucial to tourism's appropriate development: local community must agree with the touristic project otherwise it might not succeed (Andereck and Vogt, 2000, p.27). There has been some research done on different typologies of tourism on islands. For instance, Baldacchino (2006c) compares cold water islands with warm water destinations[23]. With sub-tropical weather, and warm but short, rainy and humid summers, the Azores are classified as cold water tourism islands. In addition to that, due to its geomorphology, the archipelago has few sandy beaches. This characteristic reduces the islands' attractiveness for sea and sun tourism, preventing the development of mass tourism characteristic of warm water destinations.

3.1.3.2 Tourism in Flores Island

Tourism is considered to be a key sector for the island's development but it faces challenges. The activity is in an early stage of development and it has medium growth potential, with highly diverse and original touristic resources (*POTRAA*, 2007) (*POTRAA*: Tourism Plan for the Azorean Region, in its Portuguese acronym). For instance, in Flores in 2006, only two hotels and one guest house were registered, with a total lodging capacity of 165 beds (*SREA*, 2006). But this data should be considered with caution as collected data only relates to legal accommodation in hotels and registered rural houses or other housing categories (*SREA*, 2011). In the last decade tourism in Flores has progressed in an irregular fashion (Figure 3.11).

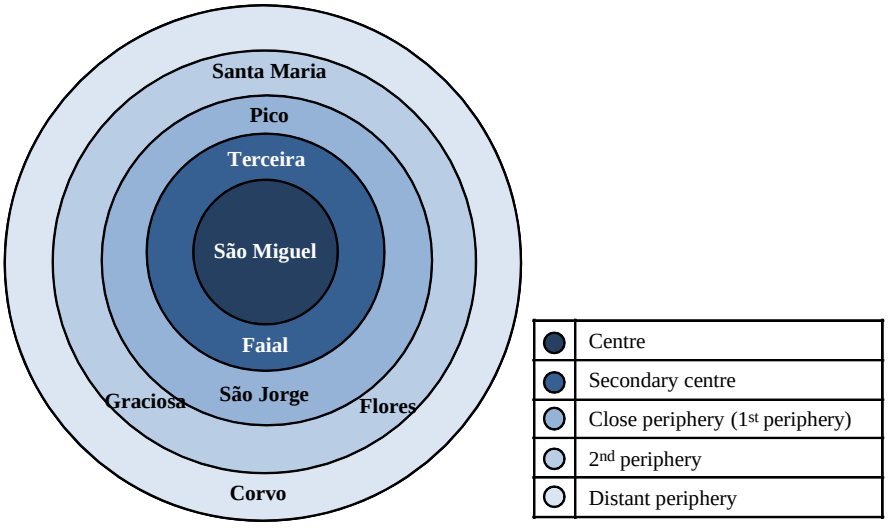
[23] Cold water tourism is: "Cold water island locations tend to have harsh as well as pristine and fragile natural environments, characterized by wide open spaces and low populations at best. They become contexts for an exceptional and expensive form of vigorous, outdoor, adventure or cultural tourism, and direct encounters with nature (observing penguins, bears or wild flowers; hunting wild game; visiting parks); history (whaling stations, abandoned mines, battle sites, research stations, explorer routes); and local culture (indigenous people, their lifestyle and artifacts): definitely not places to laze about and relax in hotel precincts" (Baldacchino, 2006c, p.186).

Figure 3.11: Flores Island, data on tourism population from 2001 to 2010 (source: *SREA*, 2011)



The *POTRAA* report informs that Flores Island has a strong vocation for scientific and nature tourism, but it lacks the infrastructures to facilitate these activities. They indicate that Flores should create the conditions needed to nurture small initiatives oriented towards discovery tourism, health and well-being. The *POTRAA* considers nature, diving, hiking and relaxation as the strategic tourism activities on the island. The recent declaration of Flores Island as a UNESCO Biosphere Reserve is directly linked to the nature tourism potential of the island as it might increase visits; it is also an opportunity to develop tourist projects that can use this designation to their advantage. The *POTRAA* places Flores Island in a secondary periphery in the tourism industry, meaning that it is rather distant to the main flux of tourists (Figure 3.12). *POTRAA*'s strategy for Flores Island is backed up by individuals who defend that rural and ecotourism have a high potential (for instance: Bragaglia, 2005 and 2009).

Figure 3.12: Tourism strategic, situation of the Azorean Islands (source: *POTRAA*)



3.1.4 Geological risks in Flores Island

The Azorean Islands are volcanic in origin and are located between the Azores micro-plate, the Eurasian plate and the North American plate. The Azores have a significant record of volcanic activity and earthquakes (*Centro de Vulcanologia e Avaliação Geológicos da Universidade dos Açores*[24], 2012), although the Western Group (Flores and Corvo) has had no recorded volcanic episodes (Azevedo and Portugal Ferreira, 2006) and they are the islands most isolated from seismic epicentres, providing the highest seismic and volcanic safety levels in the Archipelago (De Brum Ferreira, 2005, p.12). However some geomorphological risks persist in the form of potentially destructive landslides due to the combination of high slopes, the geological structure and erosion (mainly caused by sea currents and heavy rains[25]).

3.1.5 Protected areas in Flores Island

Oceanic islands are crucial in worldwide biodiversity as they house important rates of endemism and protected areas (Chapuis *et al*, 1994; Quammen, 1997, Francisco-Ortega *et al*, 2000; Stattersfield and Capper, 2000; Kelman, 2007; Lagabrielle *et al*, 2009; Dumont *et al*, 2010). The Azores, as other Macaronesian regions, have an important degree of endemism (Carine and Schaefer, 2010). Flores is the Azorean island with the highest proportion of natural areas, 75% of the area is occupied by natural habitats (Natura2000 sites and other protected areas). Protected areas are managed through a management plan at an island level: Natural Island Park (NIP) (*Parque Natural de Ilha*). In the NIPs are integrated natural reserves (*Reserva natural*), natural monuments (*Monumento Natural*), protected areas for habitats or species management (*Área protegida para a gestão de habitats ou espécies*), protected landscape areas (*Área de paisagem protegida*) and protected areas for resources management (*Área protegida de gestão de*

[24] Azorean centre of vulcanology and geologic valuation of the Azorean University.
[25] The annual precipitation in 2009 was of 1,607mm, precipitation in London rounds 580mm per year.

recursos)[26] (Figure 3.13). Each type of protected area has its own characteristics; the objective of the NIP is to be a "coherent and integrated unity, led by management and conservation objectives that consider important areas in nature, landscape and other natural resources conservation, based on scientific classification criteria, oriented by international, national, regional and local standards"[27] (Diário da República, 2011, p.1619). It can be observed that the UNESCO Biosphere Reserve map (Figure 3.14) respects the NIP areas (Figure 3.13). An important area of the island is part of the Natura2000 Network (conf. Table 3.2 for the protected areas and Appendix 13.1 for the protected species). The 4,528ha of Natura2000 sites include 18 different habitats of European importance and represent almost 32% of the island's area.

Table 3.2: Natura2000 Sites in Flores Island
(source: Azorean Government)

	Area
Special Protected Areas	
South and southwest coast (*Costa Sul e Sudoeste*)	230ha
Northeast coast (*Costa Nordeste*)	130ha
Sites of Community Importance	
Morro Alto central zone (*Zona Central Morro Alto*)	2925ha
Northeast coast (*Costa Nordeste*)	1243ha

As for the NIP, Natura2000 sites must have management plans that also consider economic, social and cultural criteria, nature conservation not being the sole concern.

[26] The regional institution in charge of the environment, the Regional Directorate for the Environment (*Direção Regional do Ambiente*) followed the IUCN's habitat classification.
[27] Author's translation, original text: "*Uma unidade coerente e integrada, pautada por objectivos de gestão e conservação que contempla espaços com particulares aptidões para a conservação da natureza, da paisagem e dos recursos naturais, assente em critérios científicos de classificação, balizados por orientações internacionais, nacionais, regionais e locais*" p.1619.

Figure 3.13: Flores Natural Island Park (source: Azorean Government)

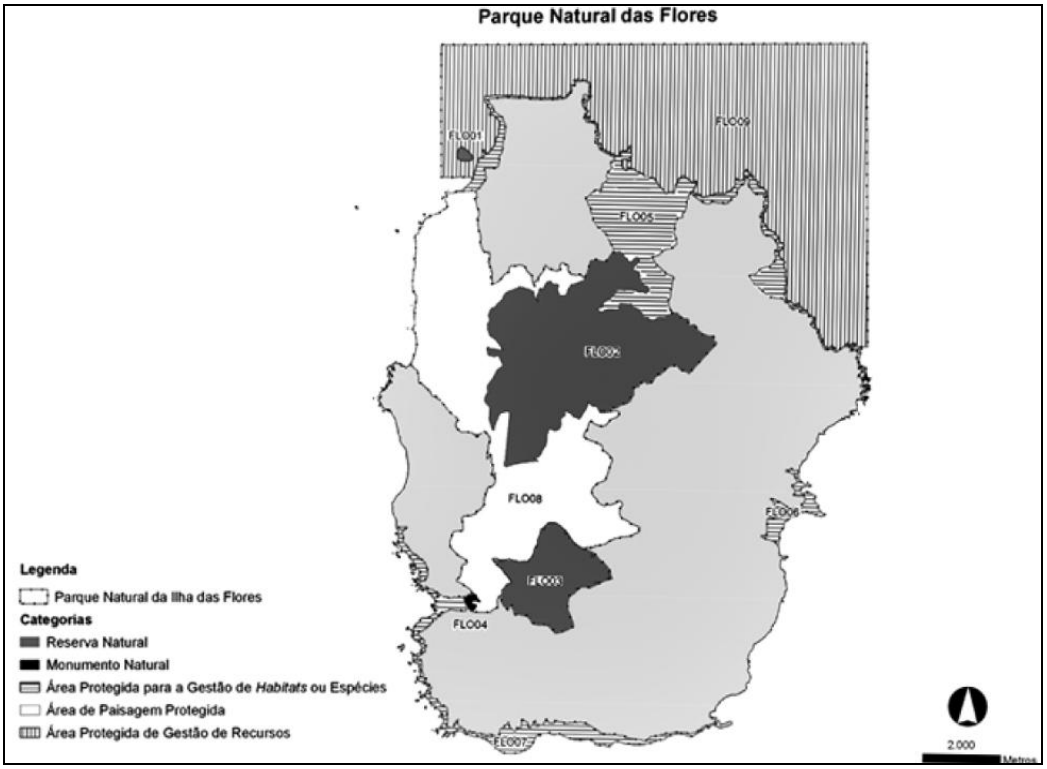
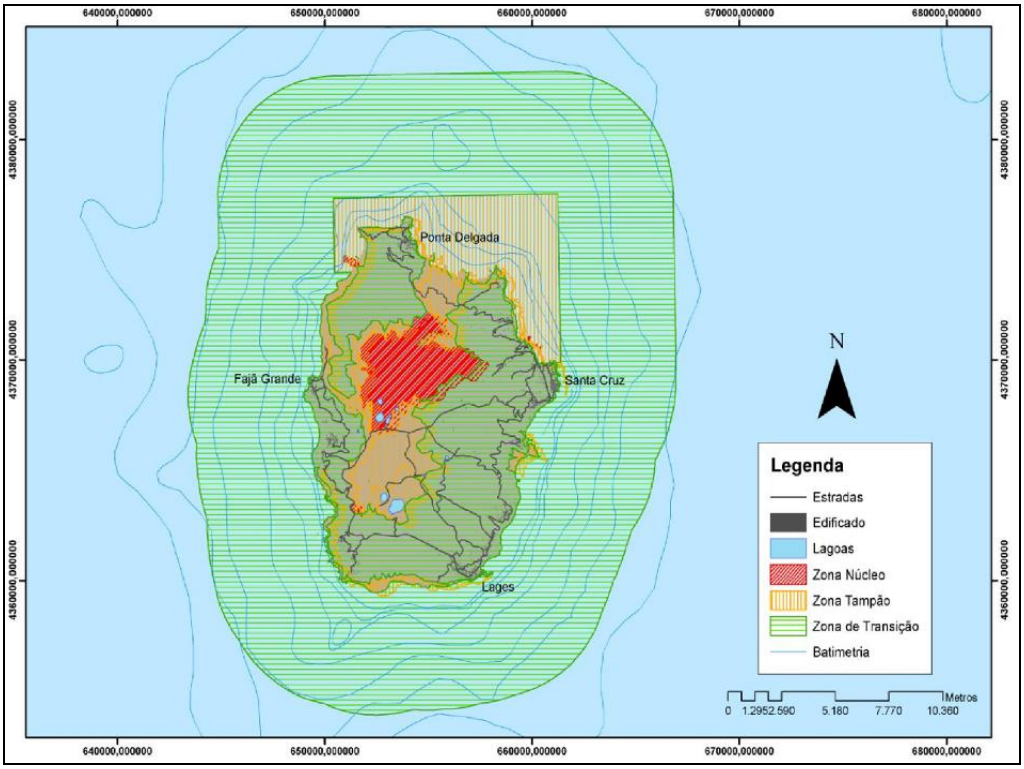


Figure 3.14: UNESCO Biosphere Reserve map (grey: built areas, blue: lakes, red: core zone, yellow: buffer zone, green: transition zone) (source: www.azoresbiosfera.com)

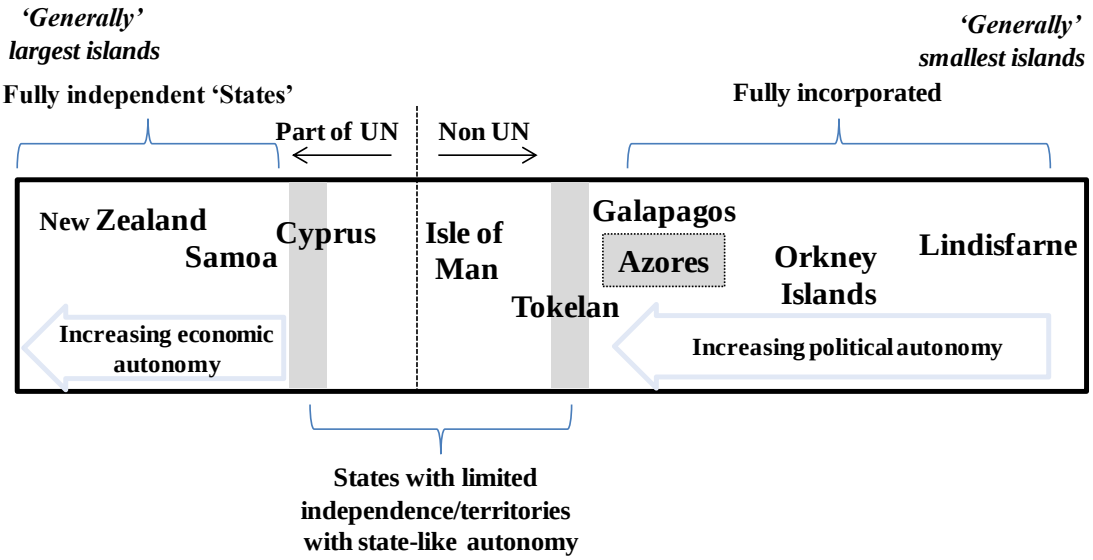


3.2 Governance structure

3.2.1 The Azorean Autonomous Region political structure

The Portuguese Constitution of 1976 (Articles 227 and 228) declares the political situation of 'autonomous region' for the Azores and Madeira. The autonomy supposes independent legislative and executive power and administrative and financial autonomy. The bodies of government are the Regional Assembly (direct universal suffrage), and the regional government. Article 227 declares that administrative and political structures are justified by "their geographical, economic, social and natural characteristics, as well as their historical aspirations for autonomy of the populations of the islands" (Suárez de Vivero, 1995, p.50). Suárez de Vivero explains the objective of the autonomy status for Madeira and the Azores (p.50): "since isolation poses greater difficulties for economic and social development, the ultimate purpose for the autonomy of the insular regions is to facilitate the development and promotion of regional interests, as well as to strengthen national unity and solidarity. In this manner the insular regions can obtain an adequate level of citizens' participation in the institutions that could otherwise be seriously limited by the long distance and isolation from the continent. At the same time the autonomy allows a regional management of the resources as a means of overcoming geographical limitations". Following the classification of the levels of islands' independency proposed by Kerr (2005) (Figure 3.15) the Azorean Archipelago with ist specific status and independence, has a similar independent status as the Galapagos Islands.

Figure 3.15: Island autonomy
(adapted from Kerr, 2005, p.504)



The Azorean regional government has a high level of independence in the fields of legislation related to 'specific interests', heritage, taxes and its institutions' internal structure. The legislation related to specific interests concerns a wide array of fields (Appendix 13.2). It is also important to point out that regional parliament can autonomously adapt European Directives to regional laws just as they can also present bills. The Azorean government is organized into seven secretariats which are divided into different sub-secretariats; conf. Table 3.3 and Appendix 13.3.

Table 3.3: Azorean secretariats

Regional Secretariat of Education and Training
Regional Secretariat of Science, Technology and Infrastructure
Regional Secretariat of Economy
Regional Secretariat for Labour and Social Solidarity
Regional Secretariat for Agriculture and Forestry
Regional Secretariat for the Environment and the Sea (*SRAM* in its Portuguese acronym)
Regional Secretariat for Health

These secretariats depend on the President of the Regional Government, the Regional Secretary of the Presidency (in charge of the Regional Parliament affairs, social communication, the European affairs and external cooperation) and the Regional Secretary of the Vice-Presidency (whose mission is to deal with the

affairs relating to the Communitarian support of the region, structural funding, cohesion funding and programmes of European initiative). This presentation of the Azorean regional power structure serves firstly to inform how the region's government is organized but it also emphasizes the region's state-like structure.

3.2.2 The political structure in Flores Island

Periphery in the periphery Flores Island does not have an autonomous status, the councils' budgets and the policies are for instance decided in the Regional Assembly and most of the regional secretariats have services on the island, acting directly on the territory. But Santa Cruz das Flores and Lajes das Flores councils have their say on land management through the County Major Master Plans. Therefore at a local level - island level - the institutional key decision-makers are the two councils: Santa Cruz das Flores and Lajes das Flores. Their role is crucial as the implementation of policies in many domains relies on them. They are also the doorway to engaging the local population or the island's non-institutional stakeholders. Santa Cruz das Flores council is divided into four parishes: Ponta Delgada, Cedros, Santa Cruz das Flores and Caveira. Lajes das Flores is divided into seven parishes: Fajã Grande, Fajãzinha, Mosteiro, Lajedo, Lajes das Flores, Fazenda and Lomba (see Figure 3.3). This administrative sub-division is not relevant for the study as the town halls (heads of the councils) centralize most of the strategic decision-making at the local level. In addition to the administrative sub-division of the island an Island Council, which has only consultative power, discusses the island's issues. This council is composed of the two mayors, four elected members from each municipal assembly, two employers' representatives, two unions' representatives and two agricultural associations' representatives (*Diário da República*, 1998).

3.3 Regional development plans

The priorities for the European Union *Transnational cooperation Programme Madeira-Açores-Canarias (MAC) 2007-2013* (2008) program for the Azores are

wealth and job creation, integration and social strengthening, accessibility improvements, the improvement of environmental systems and the compensation for the costs attributable to remoteness. As well, Moncada *et al* (2010) identify the main sustainability issues in European Islands. For the Azores the issues are: "low potential for economic diversification", "waste management challenges", "insularity and peripherality" and "low levels of education and training" (pp.71-72).

In the Azores a series of development and management plans have been created with the aim of directing the archipelago's development. The most important of them, the Regional Territory Planning for the Azorean Region (the *PROTA* is the Portuguese acronym) (*SRAM*, 2008a and 2008b), frames planning policies for the decade 2010-2020. The document is based on a deep analysis of every economic and social aspect of the Azorean situation. Its aim is to translate into specific terms how the region's sustainable development can be realized; it coordinates different policy sectors and it is the reference point for local development plans in land management. The four most important objectives of the plan are:

- to describe the development options for the sectors' plans which have direct or indirect implications for the regional territory,
- to specify the main objectives of regional development,
- to reduce the regional asymmetries,
- and to be the reference plan for the Special Plans[28] (*Planos Especiais de Ordenamento do Território, PEOT*) and the Municipal Plans for Land Management[29] (*Planos Municipais de Ordenamento do Território, PMOT*)

The *PROTA* is crucial as it frames key aspects of land management. This is why it is considered to be the main reference tool. But local development plans are, in

[28] In the Portuguese legislation, the Special Plans are government tools to reach goals of national interest that have particular impact and to preserve natural assets in order to assure the sustainable utilisation of the territory. There are four categories of such plans: public wetlands management plans, coast line management plans, protected areas management plans and estuary management plans.

[29] The Municipal Plans for Land Management legislate the productive use of space; defining the potential for occupation, use and transformation of an area. The PMOT is the reference for the classification (rural or urban) and qualification (agricultural areas, extraction areas, public facilities areas…) of the areas. There are different kinds of PMOT: municipal director plans, urbanization plans and detailed plans.

practice, very important as councils have enough autonomy and freedom to implement local projects without considering all the *PROTA*'s indications, and the region does not always have strong control over what is done by municipalities. The *PROTA* is based on a series of development scenarios (*SRAM*, 2008a and 2008b). The first scenario is the *Tendency-Reactive Scenario* (TRS) which describes the continuation of actual tendencies with reactive actions built on internal capacities. This scenario can be assimilated with Berkhout *et al*'s (2004) "reorientation of trajectories" typology of the transformation process. The second, more ambitious, scenario is the *Proactive Sustainable Scenario* (PSS); based on new development processes which can be aligned with Berkhout's "endogenous renewal" or "purposive transition". *PROTA* scenarios are based on 21 factors (conf. Appendix 13.4) that define the strategy and are decisive in its design and implementation.

The tourism sector strategy considered in the *PROTA* uses as reference the *POTRAA*'s analysis. The *POTRAA* presents three scenarios: growth and compromise (reactive and tendency), growth of the present model (but because of regional specificities the model of massive tourism growth does not seem realistic) and following a new direction with less growth (based on sustainability factors and counting on diversity). Following *POTRAA* indications, *PROTA* considers using as a reference the first tourism scenario (growth and compromise). This scenario consists of finding a tourism model that permits increasing socio-economic benefits from tourism without compromising the sustainability of the archipelago.

In addition to the *PROTA* (and the *POTRAA*) there are an important number of regional reports and management plans that are specific for key matters: water and hydrographical basins of the volcanic lakes, protected areas, marine areas, coast line, rural areas, wastes management, health care, innovation, strategy for tourism, and employment, which are not related directly with land settlement, have their own regional plan (conf. Appendix 13.5). This long list of management plans and reports should be considered as a good starting point for aiming towards sustainability as they testify to a capacity and a willingness to understand, to

appraise and to manage the territory. But it is also a sign of the awareness of the necessity of managing the territory to assure the preservation of essential ecosystem services production (such as the water plan, the coast line, the protected areas and the marine areas plans). Therefore the region seems equipped with the techniques and planning tools necessary for sustainable planning.

3.3.1 The Regional Plan for the Sustainable Development of the Azores: a regional foresight scenario exercise to define strategies for sustainable development

Complementing the *PROTA* the region had also developed the *PReDSA* (Regional Plan for the Sustainable Development of the Azores) with a longer time horizon to 2030. This plan is more abstract and the vision is wider, which is why the *PROTA* makes only a brief reference to it. One of the previous documents to the *PReDSA*, the Perspectives for Sustainability in the Autonomous Region of the Azores (*Perspectivas para a Sustentabilidade na Região Autónoma dos Açores*) (Secretaria Regional do Ambiente e do Mar, 2006) proposes five sector-based potential scenarios for development: *Hotelândia* (tourism development), *Lactogenia* (agricultural development), *Ecotopia* (natural assets), *Sociopolis* (social cohesion) and *Infocracia* (information society). The objective of these scenarios is to promote debate about key factors in the Azorean future development and to raise awareness about future challenges and the consequences of the development strategies. The potential scenarios are described in the report as following (the text and figures, Appendix 9, are translations of the report's original scenarios):

1- *Hotelândia* scenario:

   The development of housing and transport infrastructures allows profit to be made from the quality of regional products and natural and cultural assets. This scenario consists of enhancing all the tourism potential of the region, overcoming the legal and transport constraints to its development. This development model increases the human pressure on natural habitats. The scenario supposes an important economic growth based on tourism and infrastructures' construction.

Agriculture, through rural tourism, is able to benefit from tourism growth. In 2030 there would be two speeds of tourism: traditional mass tourism model in big islands and rural and nature tourism in small islands such as Flores. Seasonality in tourism would be reduced but some Azoreans can feel nostalgia for how their region was at the end of the 20th century.

2- *Lactogenia* scenario:

Economy based on the production of quality dairy products and meat. This scenario supposes the intensification of farming activity. It creates pressure on natural habitats such as volcanic lakes. It is based on European subsidies which allow employment and wealth creation but the institutions do not prioritise aspects such as education and public investment.

3- *Ecotopia* scenario:

This scenario values above all the conservation of the natural assets present in the archipelago. Restrictions come from ecological and geological factors, for instance construction permits are limited to specific areas and agriculture is limited due to its pollution. Prioritization of renewable energies (80% of the energy consumed is geothermal), and high energy efficiency in industry, but these limitations can impose limits on some industrial activities, which means less economic growth and emigration. This scenario could be linked with the full implementation of the UNESCO's Biosphere Reserve recommendations.

4- *Sociopolis* scenario:

Sociopolis considers the Azorean citizens as the main actors of society; priority investment is in them. It supposes eliminating social injustices and enhancing education. The vision and the fruits of the actions are for the very long term, thinking on the effects for next generations. But these actions suppose higher taxes that slow the

economic growth. Environmental issues are not a priority, but the Azorean youth will be more competent than at the beginning of the century.

5- *Infocracia* scenario:

New information technologies enable Azoreans to communicate with the rest of the world and especially the Azorean Diaspora living in North America, through the creation of a "digital community". Young people are interested in the initiative but older strata of society feel rejected as they cannot use these technologies. Information technologies are used in order to develop sustainable management processes (for instance in tourism).

As these scenarios represent future visions of what the archipelago could be like in the long term they are one of the starting points of the present project. They help in figuring out what the development of the region can be like and they foster debate, by presenting five distinct visions. The report also presents a Regional System of Sustainable Development Indicators (*Sistema Regional de Indicadores de Desenvolvimento Sustentável*), these 68 indicators, presented in Appendix 13.6, are arranged into four main groups: environmental, economic, social and institutional; and divided into themes and sub-themes. Chapters 4 and 5 detail how these indicators were used as the basis to select criteria for the multi-criteria appraisal process. The *PReDSA* proposes also a SWOT analysis for the Azores (Table 3.4). This SWOT analysis is important as it sets out the positive and negative leading strengths and weaknesses used in the development of the five institutional scenarios.

Table 3.4: Azores' SWOT analysis (*Secretaria Regional do Ambiente e do Mar* (*SRAM*), 2006)[30]

Strengths	**Weaknesses**
Geostrategic situation	Transport systems
Energy potential	Isolation
Young population	Geographic discontinuity
Low unemployment	Emigration
Quality of life	Infra-structures repetition
Quality of local products	Economic dependence
Potential in leisure activities	Conservationism
Quality of natural heritage	Lack of technical information
Differentiation of cultural heritage	Ecosystems fragility
Opportunities	**Threats**
Immigration	Extinction of traditional sectors
EC financing	Inter and intra-island asymmetries
Foreign investment	Education and healthcare costs
International agreements	Natural and man-created risks
Market for regional products	Exclusive Economic Zone diminution
Market for ecotourism	External competition to regional products
Hydrothermal resources	Loss of environmental characteristics
Scientific investment networks	Loss of cultural characteristics
Marine resources potential	Inadequate policy making

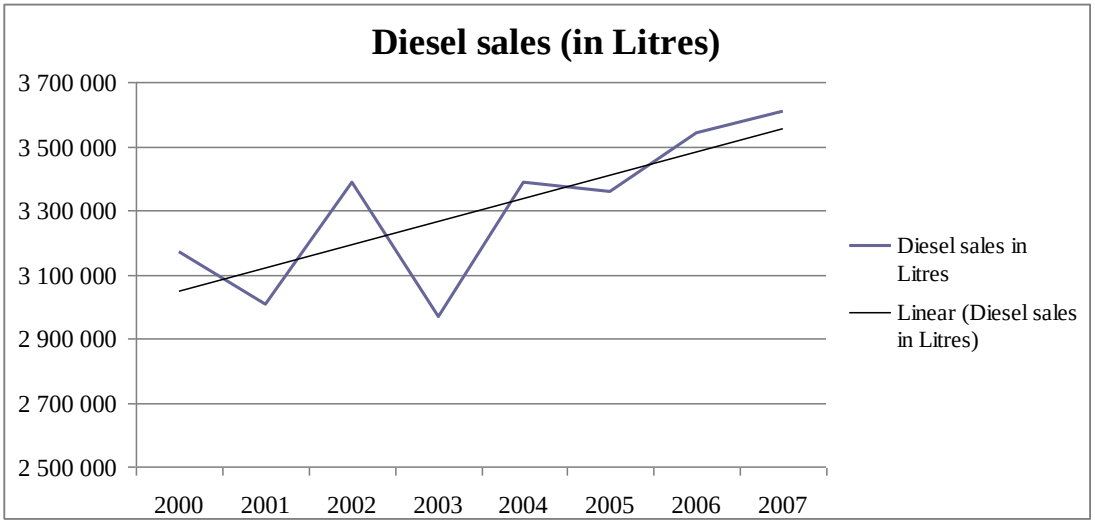
3.4 Where is Flores in the path to sustainable development?

As Bragaglia, Flores' guest house manager and historian, observes, the Azores are in a privileged situation where they can benefit from both unique and relatively well preserved natural patrimony and the potential benefits of modernity. Their success depends on how they are able to combine both. Obviously the region is not the only one in this situation but observations such as this one point to a high level of concern on the need for, and the opportunity of, combining modernity with environment conservation. On the other hand, more ambitious projects such as building an eco-island (conf. Chapter 2: Section 2.3.1.1) can be the consequence of the process started with the UNESCO Biosphere Reserve declaration. But international statuses should not hide the fact that conservation projects must be implemented locally; these projects should be community projects agreed by the population.

[30] Author's translation.

Regional institutions keep a series of statistics that can be used to monitor Flores' trends on consumption of a series of goods that indicate where the island is in the path to sustainability. For instance air contamination might be related to technological evolution and oil consumption. Considering that there is not enough data on air contamination and technologic evolution, *ceteris paribus* oil consumption increase indicates that Flores Island is (potentially) polluting more. Moreover, as Flores is an isolated island that does not have its own fossil fuel resources, increases in oil consumption indicates more dependency on the exterior, thus, less self-sufficiency. Oil purchasing behaviour evolution can thus be an indicator of sustainability or lack of sustainability on a small island. As diesel is the most consumed oil in Flores Island (petrol represents only 1/5 of diesel consumption) it is a more representative indicator of the trend. As can be seen in Figure 3.16 diesel consumption has been increasing in the last years.

Figure 3.16: Diesel consumption in Flores Island (*SREA*, 2011)

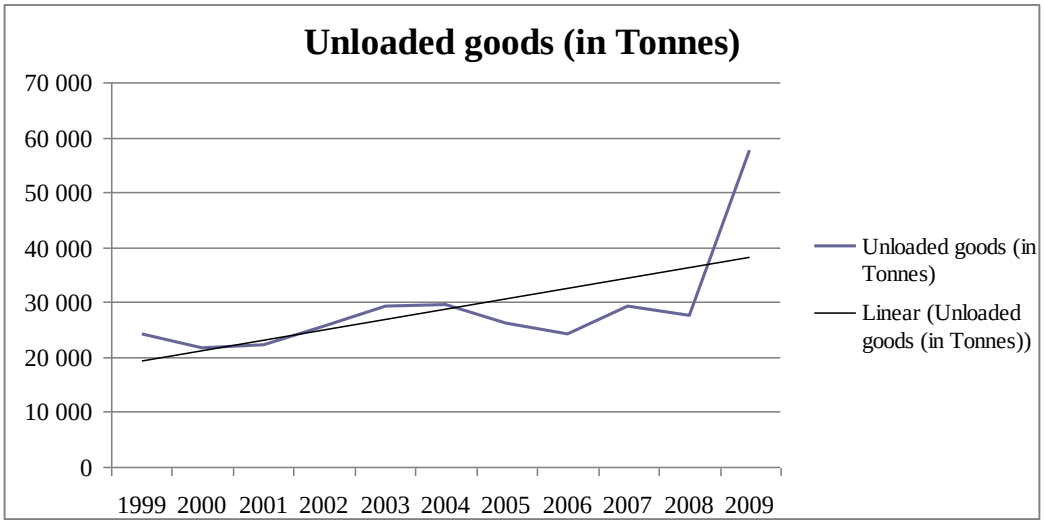


As indicated above, Flores' population has been decreasing since the mid 20th, thus, if Flores Island is in the path to sustainability, it might be expected that consumption patterns have followed similar trends[31]. To synthesize, if Flores is on a path to sustainability consumption data should show a modification in buying behaviour. Unloaded goods (in tonnes) in Lajes das Flores harbour indicates

[31] This is not totally true because consumption is also related with purchasing power, but as indicated in the literature review some trends might point out higher or lower levels of sustainability on a small island, for instance higher levels of self-sufficiency.

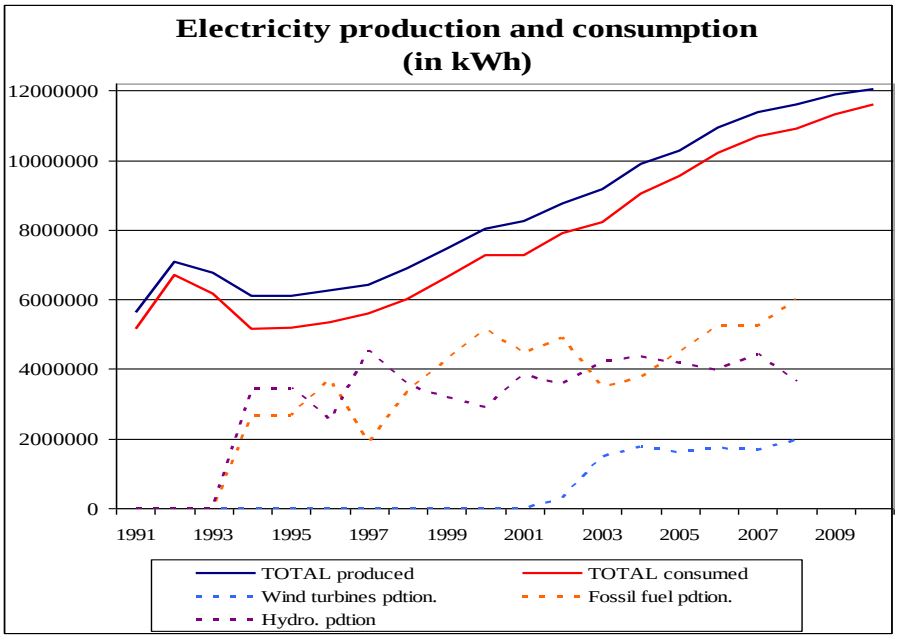
consumption trends on the island (Figure 3.17), this data on unloaded goods is even more crucial as there were no recycling facilities on the island. As it can be seen, and even omitting 2009 data, the trend in unloaded goods has been to increase. Loaded goods (exported goods) have been marginal in comparison with unloaded ones (imported goods); their trend has also been of increasing.

Figure 3.17: Unloaded goods in Flores Island (*SREA*, 2011)



Finally the trend in electricity consumption gives a clear idea of the tendency to sustainable development in Flores Island. Figure 3.18 shows that since 2002 there are two renewable sources of electricity: hydroelectric and wind turbines. Since 2003 they have produced half of the kWh of electricity on the island, Flores is the Azorean island with highest percentage of renewable energy. But the data shows that increases in electricity consumption have mainly been powered by fossil fuel combustion.

Figure 3.18: Electricity production and consumption (*SREA*, 2011)



3.5 Why is Flores a good case study?

Flores Island's socio-economic structure, the natural areas importance and, at the time, possible UNESCO Biosphere Reserve declaration were the main arguments to choose Flores as the research case study. The other islands were both too big and populated (São Miguel, Terceira, Faial, Pico and São Jorge Islands), too small (Corvo Island), or presented some characteristics that made them less interesting or suitable (Santa Maria and Graciosa Islands). Although all the islands are related and dependant on each other, Graciosa and Santa Maria Islands are much more directly linked to one 'big sister island' (Terceira and São Miguel respectively). Flores, isolated with Corvo in the Western Group, is more *autonomous* or at least less dependant on a single island. Table 3.5 summarizes the eligibility criteria taken into account when choosing the case study island. Green shaded cells refer to the characteristics for each island case that made them eligible. As it can be noticed, Flores Island is the island whose characteristics better fulfil the needs of the study.

Table 3.5: Eligibility criteria for the selection of the case study island

Island	Size (km^2)	Population (Census 2011)	Nº of councils	Isolation/ link with other islands	'Green islands' project	UNESCO Biosphere Reserve	Other relevant factors
St Maria	97	1,000<6,000	1	Strong link with S. Miguel	No	No	International airport, important relative weight on the island
S. Miguel	747	>10,000	6	Main door to the Azores, link with all the other islands	Yes	No	Main island, Ponta Delgada (*capital* of the Azores)
Terceira	400	>10,000	2	Main island in the C. Group	No	No	NATO military base. History
Graciosa	61	1,000<6,000	1	Strong link with Terceira	No	Yes	
S. Jorge	246	6,000> 10,000	2	*Triangle island*	No	No	Importance of cheese production
Pico	451	>10,000	3	*Triangle island*	No	No	Relevance of whale hunting in the past, actually whale watching tourism
Faial	170	>10,000	1	*Triangle island*	No	No	Importance in yachting. Recent volcanic activity
Flores	142	1,000<6,000	2	Dependenc y on a single island not so evident	Yes	Yes (May 2009)	Pronounced isolation. Importance of renewable energy
Corvo	17	<1,000	1	Strong link with Flores	No	Yes	Pronounced isolation

Flores presents a series of challenges that place this island in a privileged position for the study. The island has a very low population density and population is concentrated in two centres; this has allowed for almost 75% of the island area to be maintained as natural areas in a relatively good state of conservation. Natural areas are protected by conservation status, and were the main reason why the island has been declared a UNESCO Biosphere Reserve. There are differences between conservation statuses (see the section about protected areas) but they

overall represent an important opportunity for ecotourism. This also presents challenges: how to manage and finance an area of that importance? How to ensure its conservation? On the other hand, politicians and entrepreneurs aim to increase the economic activity on the island, challenging the efficacy of regional institutions in facing the double (and often seen as contradictory, conf. Chapter 2: Section 2.2.1) goals of nature conservation and human development.

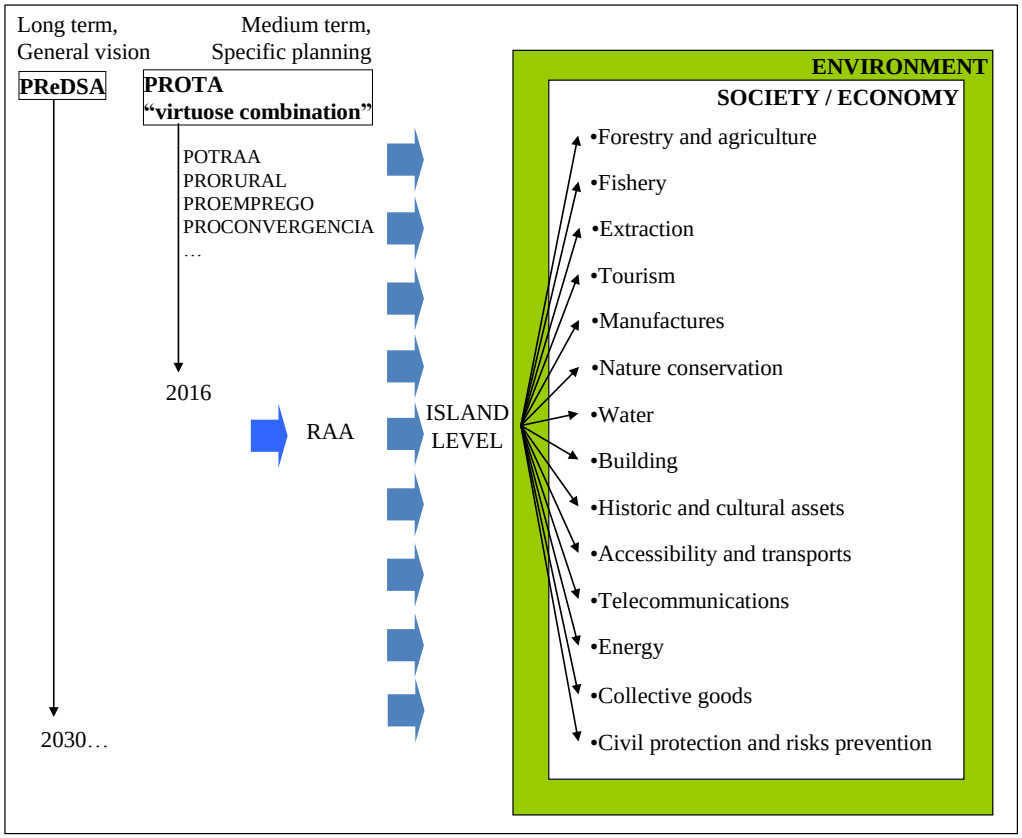
3.6 Summary

Flores Island is characterised by a pronounced isolation. This isolation is not only due to the Azorean archipelago situation; Flores' isolation is also in relation to the other islands in the region. Its geomorphology has played an important role in human settlement, with only small land strips on the coast available for human occupation, leaving the interior of the island for farming activities, timber production or, in the inaccessible areas, pristine. This geomorphology prevented the island for having a natural port essential for easing human and goods transport. This limitation of human settlement has been the opportunity for the preservation of valuable natural areas, to which Natura2000 sites and the UNESCO Biosphere Reserve testify. But the island's morphology also presents some geomorphologic risks. While Flores and Corvo are the islands with less volcanic and tectonic threat, the combination of dramatic slopes, strong sea currents and heavy rains increase landslides risks. Land settlement plans might consider these limitations. The island's reduced population (absolute and in relation with the area) has been a factor for natural resources' preservation but it has also limited socio-economic development. The emigration experienced from the 1950s has left the island with barely 4000 inhabitants and the tendency does not seem to change.

Flores Island was selected as the case study because it better matched the requirements for the research. Furthermore Flores' society seems to be at a crossroads where it can decide which typology of development it can follow. While not isolated from global sustainability needs and challenges, it can benefit

from a relatively well preserved cultural and natural heritage, benign weather, and potential touristic attractiveness to play its cards in order to succeed in the transition for higher sustainability standards. The island's development for the medium and long term is framed by regional plans that consider its specificities. The island scale is an opportunity to consider sustainability challenges for the whole territory. This is a good starting point for developing specific research about what the transition process could be, through a scenario foresight analysis, and thinking about what might be the actions that could help start the transition. The process helps discover and analyze the applicability of the framing plans as well as being an opportunity for thinking about disruptive changes that can affect the development of a sustainable society. Figure 3.19 shows how the study is framed into the regional policies and how it considers many socio-economic activities; thus multidisciplinary issues and wide variety of perspectives to bear in mind.

Figure 3.19: Present research and regional politics



Even though Flores faces important challenges it also presents conditions that seem to make it possible to *envisage* a brighter future. Regional awareness of the ecological value materialised in the Natural Island Park's creation, is supported by international recognition (*e.g.*: the UNESCO Biosphere Reserve declaration) and the fact that the island is 'equipped' with a plethora of local and regional settlement plans and reports, the importance given to renewable energies and the future running of state of the art waste management facilities are signs of an orientation towards more sustainable development. But these facts are contradicted in a number of ways. While the population has been decreasing, some sustainability indices have not improved (for instance electricity and diesel consumption levels have been increasing year by year, increases in diesel consumption testify for a higher energetic dependency on the exterior, increasing the island's vulnerability in energetic matters, conf. Section 3.4).

Research aims and objectives:

Considering the learning from the literature review chapters and the case study the present research has answered to the following aims and objectives (already presented in Chapter 1: Section 1.2):

> **Aim 1:** To inform the sustainable development of a small island by means of foresight scenarios developed and appraised in a participative way.
>
> **Objectives:**
>
> i) To involve a wide range of participants in the process in order to have an ample sample of perspectives and to allow knowledge sharing, increase social learning and facilitate socially robust knowledge creation.
>
> ii) To develop and appraise in a reflexive and participative way foresight scenarios to plan for sustainable development in the context of small islands.
>
> iii) To inform from a local (island) and regional (archipelago) perspective the main factors enabling sustainable development in small islands.

Aim 2: To adapt a multi-criteria appraisal method within a participative process to create a novel participative methodology, critically apply the methodology and contribute to debates on participatory planning and appraisal of foresight scenarios for sustainable development.

Objectives:

i) To use and analyse the applicability of the multi-criteria appraisal method chosen to inform decision-making in the context of small islands.

ii) To analyse the reasons for the uncertainty observed in the multi-criteria appraisal.

iii) To analyse the relation between qualitative and quantitative data gathered in the process (more specifically in the multi-criteria appraisal interviews) in order to inform their coherence.

iv) To explore the convergence or divergence of the different perspectives' groupings undertaken in the research in order to provide information on the existence of consensus on a preferred future.

Chapter 4: Methodology

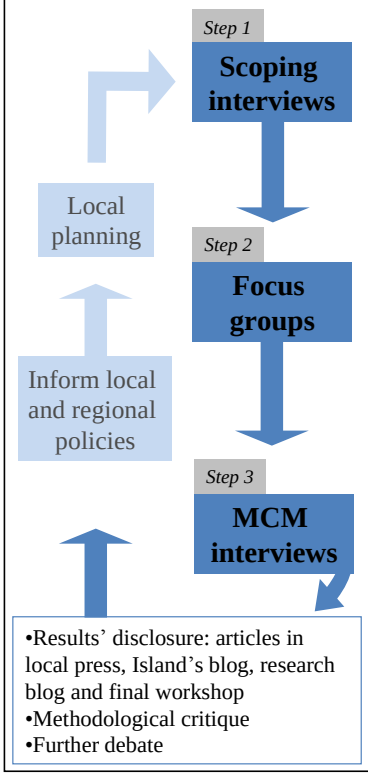
Fábrica da baleia, whale factory (Santa Cruz das Flores).

4 Methodology

4.1 Introduction

The review of the literature (Chapter 2) afforded the opportunity to identify a theoretical framework for supporting decision-making for sustainable development. Chapter 2 also identified the potential for combining multi-criteria appraisal with a participative exercise to inform policies for community sustainable development (Stirling, 1998 and 2006; Gowdy and Erickson, 2005; Antunes *et al*, 2006). This led to the creation of an innovative methodology combining multi-criteria mapping in a participative process to inform holistic non-technical scenarios: 'participative foresight scenario mapping' (Figure 4.1) (Section 4.2 develops the methodology). Participative foresight scenario mapping consists of two main stages: a participative and reflexive scenario foresight development process undertaken with decision-makers, civil servants, local key informants and lay citizens, followed by a final multi-criteria analysis of the alternative development scenarios. Scenario building is done in two steps. First: scoping interviews with decision-makers, civil servants and key informants (Step 1), which provide input to create draft multi-disciplinary scenarios. In the second step these draft scenarios are appraised and elicited by lay citizens in focus groups (Step 2). The scenarios developed for the purpose of the project are then appraised (alongside regional institutional scenarios - *PReDSA* scenarios presented in Chapter 4 -), in a final multi-criteria step by the interviewees previously involved in the scoping interviews, with criteria chosen by lay citizens, in a reflexive manner (Step 3).

Figure 4.1: Participative foresight scenario mapping process



Aim of the step	Participants	Outcome	Length
Preparatory phase: stakeholders' selection, preparation of informative material and ethics			
•Develop individual visions •Propose projects	Stakeholders (24)	•2 draft scenarios for the island •Note sheets	1 month
Data analysis, creation of the draft scenarios from the interviews and the final list of proposed projects for the island. Disclosure of the focus groups meetings.			
•Develop and comment on the draft scenarios •Discuss preferences •Select criteria for appraisal •Appraise the projects proposed in the scoping interviews and propose new ones	Lay citizens (30 in 7 groups)	•Final scenarios •Criteria for appraisal	2 months
Data analysis, creation of the final scenario. Preparation of MCM interviews' material and contact with stakeholders.			
•Scenarios' appraisal (quantitative and qualitative data)	Stakeholders (19)	•MCM appraisal informing the Island's possible development pathways	2 months
Data analysis.			

In parallel with the application of the participative foresight scenario making process, a series of exercises were undertaken to identify potentially positive projects for the island; providing additional data to inform, in a more concrete way, the transition to sustainability on the island; this information is presented in Appendix 15. The next section explains how the novel methodology of participative foresight scenario mapping was designed and applied in the case study undertaken on Flores Island in 2009.

4.2 Participative foresight scenario mapping methodology

The division of the novel methodology into three steps respects the interviews' iteration and dissects the methodology in a more easily understandable manner[32]. This section presents the purpose of each step and how each stage of participation

[32] Appendix 6 presents summary cards of the different steps of the project.

contributed to the process. Steps 1 and 2 correspond to the scenario foresight development phase, and Step 3 is focused on the appraisal of the portfolio of scenarios. But first, the participatory reach of the process (Section 4.2.1) and the criteria selection (Section 4.2.2) need to be explained separately.

4.2.1 The project and public participation

One of the starting premises was that decision-makers, civil servants and key informants are the holders of information or perspectives that can be shared with less informed individuals. The project was aimed at enabling circulation of information among all the research participants. This required the process to begin with scoping interviews with the decision-makers, civil servants and key informants; considered as specialist stakeholders. The outcomes were later shared with less informed individuals (lay stakeholders, referred to in this thesis as lay citizens), enabling a top-to-base flow of information. Some authors use the term "lay stakeholders" to refer to unspecialised lay citizens that have their say on some issues (Lotov, 2003; Fung, 2006; Lowes *et al*, 2010); Fish *et al* (2011) use the term "lay experts" (p.68). However, because the decision-makers, civil servants and key informants were asked to reflect on a holistic vision for the island, their level of specialisation was very often compromised, challenging the differentiation between specialised and lay stakeholders. Indeed, the multi-disciplinary nature of the project meant that the expertise of the 'expert stakeholders' was relative (this is commented in depth in Chapter 5).

In order to clearly differentiate these two groups of individuals it is important to clarify now the terminology used in the present and following chapters. The individuals interviewed in the scoping and the multi-criteria interviews are referred in the thesis as: stakeholders, specialised stakeholders or interviewees. The members of the focus groups are referred as lay citizens or participants. Sometimes, when referring to all the participants in the project, the expression 'research participants' is used. As noted above (and discussed later), this terminology is rather arbitrary as both groups showed that they can have informed or uninformed perspectives depending on which subject was being discussed.

However, the terminology refers to the starting hypothesis and it echoes the iterative (‘top-to-base’ and ‘base-to-top’) circulation of information enabled by the methodology.

4.2.1.1 Researching a small community: positionality and ethics

The geographical context - a small Portuguese Atlantic island -, and my personal background were the two main aspects influencing the relationships I had with all the research participants. Due to the nature of my research, ethical concerns were not so much concerned with the confidentiality of the information; rather they were directly related to the relation with the research participants. Prior to the fieldwork, ethical clearance was granted by Brunel University and the research participants were asked to complete an informed consent form (Appendix 1). The stakeholders and the participants in the focus groups were informed of the purpose of the research, their role in it and the confidentiality policy. This last point is not so important because the nature of the research did not intend to comment on confidential information, as research participants were asked to give their personal opinion not their employers’ perspectives. Indeed, for some participants confidentiality was not a problem and they would not have minded having their real names disclosed. However, I respected the statements given in the consent forms and the contributions are attributed to pseudonyms. I will start by analysing the geographical context and how my situation influenced the relationships I had with the research participants.

As noted above, there were factors that were directly attributable to the context (a small closed community) that affected the project. One, commented on later for the focus groups (Section 4.2.4), was that the participants knew each other relatively well. This is relevant when considering the interactions within the groups. It was unnecessary to present the participants to each other but, most important, it seemed that they already knew each other's opinions, which had advantages and disadvantages. On the one hand, it eased facilitation as the participants were in groups familiar to them and they could express themselves with confidence. But on the other hand, this meant that they were probably omitting part of their arguments as they considered that the other members of the

groups knew what they were talking about; this fact challenged later data analysis. This extract of a conversation between two participants to the tourism sector focus group is representative of this, here Márcia posses a rhetorical question to Lubélio implying that she knows his answer:

> " Lubélio:
>
> *I know it* [Flores] *for some years and we continue to be how we were. The kids still have to leave the island* [to study and work] [interrupted]
>
> Márcia:
>
> *Sorry, but I have a question for you. Why do you live here for 20 years? Answer to my question. Because you think that it is the perfect place to live and have children!*"[33] (tourism sector - focus group)

But another factor related to the small size of the community played an important role in the project. Because I was facilitating the focus groups and interviewing the specialised stakeholders twice, a relationship between me and the participants developed. I saw some participants in the project almost on a daily basis and established good relations with them, and also some interviewees provided me with logistical support (for instance printing documents or helping me contact participants in the focus groups). In addition to this, the fact that most specialised stakeholders were interviewed twice influenced the MCM interviews. As they had already developed some of their visions for the island they were not necessarily developing their arguments in the MCM interviews, assuming that I already understood their ideas. As a facilitator, I had to make an additional effort to ask them to go further in their arguments. I suspect that some of them were also trying to understand what my point of view was in relation to Flores' development. Where this was obvious, or a question was directly put, I stated that my point of view was neutral. This conversation with the manager of the regional association that supports local development is a good example:

---

[33] " Lubélio:
Já conheço isto há uns anos e continuamos a estar como estávamos. Os miúdos continuam a ter que ir-se embora. [interrup]
Márcia:
Desculpa mas tenho uma pergunta para te fazer. Porquê cá estás há 20 anos? Responde a minha pergunta. Porque achas que é o sítio ideal para tu viveres e teres os filhos." Tourism – focus group

“ Interviewee:

Maybe here it could score 5 [scoring *Hotelândia* with farming criterion]. *I consider that farming is essential in Hotelândia's vision.*

Researcher:

Ok.

Interviewee:

I do not know if you agree with me but... I think that it is true. [laughs]

Researcher:

I do not have to agree. My opinion is not important.” [34]

During the four months I lived on the island I did not have any problem of integration. As a Spaniard who already knew the Azores well and spoke Portuguese, I was seen as a foreigner but with very close cultural links; Portuguese and Spanish cultures are similar, the relations are usually cordial, and mutual understanding is fairly natural[35]. Cultural closeness, similar expressions and body language, between the researcher and the research participants are positive points as it balances the researcher-participant relationship, and it fosters a climate of co-operation and mutual understanding. Furthermore, people appreciated the knowledge and closeness I had with the Azorean culture, this eased relations, and fostered confidence in myself and my work. Therefore the cultural and language differences did not threaten the research. Indeed, it was only

[34] “ Interviewee

Se calhar então podemos ir aí por um 5. Eu considero que a agro-pecuária é fundamental na visão da Hotelândia.

Researcher

Ok.

Interviewee

Não sei se concorda conmigo mas.. eu acho que é verdade jajaja

Researcher

Eu não tenho que concordar, a minha opinão não conta.” (regional manager of local development association [Francisco T.])

[35] As the manager of the regional entrepreneurship support services stated: “*The language was not a problem. As I use to say... if Spanish people speak slowly we understand everything.*” “*Nem sequer a questão da língua foi um problema também. É o que eu acostumo dizer, se nós... se os espanhóis falarem devagarinho nós compreendíamos tudo.*” (regional entrepreneurship support service [João B.])

when the subject of fishery was discusses did I notice some of the Portuguese/Spanish rivalry. This point requires some explanation. Spanish (European) fishing boats can fish in the Azorean Exclusive Economic Zone (100 to 200 miles offshore); however locals do not consider that foreign boats aggressive fishing techniques are sustainable and fair towards local fishermen. When these facts were mentioned my reaction was to say that I was aware of this situation and that I could not do anything about it. I consider that the fact that this conflict was remarked on in the focus groups and in the interviews is a positive symptom of my good relationship with the research participants. As the craftswoman mentioned:

> "*About controlling fishery, I think that it is very important, because mainly… I am not speaking to a Spaniard* [me]. *I am speaking to a person that invited me to discuss.* [Laughs]. *But the Spaniards* [fishing boats] *come here and they clean* [fish] *everything*."[36] (craftswoman – FGI)

In addition to the closeness I had with the Azorean culture, the fact that I had already worked in the Azores in a LIFE project (LIFE Priolo in São Miguel Island) provided an opportunity to contact the first stakeholders I wanted to work with (the rural tourism specialist, the regional member of the nature conservation secretary and the member of the regional conservation association). Once I had secured their participation it was easier for me to convince the other targeted participants to join my project.

4.2.1.2 Public dissemination of the research project

Special care was taken to disseminate the results of the research to the local population. From an ethical perspective it is good practice to inform the research participants of the results of the research. In addition, information dissemination is one way to continue the process, enlarging the circle of the discussion to the wider public and reaching individuals who were not contacted in the fieldwork phase. Certainly, using local means of communication had the effect of increasing the impact among *florentinos*. Because information disclosure was important in the

[36] "*A questão da fiscalização das pescas, acho que isso é importantíssimo, porque principalmente, eu não estou a falar com um espanhol. Eu vou falar com uma pessoa que me convidou para a gente conversar. Jajajaja. Mas os espanhois vem aqui e limpam tudo.*" [craftswoman – FGI]

process, efforts were made to disseminate the research results at community level and to inform the community through local press articles[37] (Appendix 4.5), posters (to disclose the focus groups, Appendix 7), a research blog, http://flores-visoesdefuturo.blogspot.com/ (Appendix 4.4), and a final dissemination workshop held in June 2012 (see Chapter 5: Section 5.3). The press articles and the research blog explained to a lay public the purpose of the research, they presented the results regarding the island's sustainable development and the two foresight scenarios built for Flores' development. The research blog also allowed visitors to comment on the project, but visitors to the research blog tended only to congratulate the researcher on the work. The blog was disseminated through local press articles and a local blog, http://ailhadasflores.blogspot.co.uk/, which reproduced some of the information. The research blog was visited by around 800 people in the first two years of its existence (mostly from Portugal, the US and Brazil).

The participative foresight scenario mapping methodology presented some novelty in the selection of the criteria used in the appraisal as it engaged lay citizens directly in their selection, which affected the stakeholders' MCM appraisal. The criteria selection processes are explained in the following section. Then the three steps of the participative foresight scenario mapping methodology are developed in depth in sections 4.2.3, 4.2.4 and 4.2.5.

4.2.2 Criteria selection (focus groups and MCM interviews)

The selection of the appraisal criteria by lay citizens was one of the innovations of the methodology; a means by which participants could identify their main concerns for the island and they could provide a shortlist of relevant criteria. The selection of the criteria for the subsequent multi-criteria appraisal were the result of a compromise between methodological constraints of consistency within the research project and regional policies, and the objective of giving a wide enough range of selection to the lay citizens. Criteria selection was made by means of an

[37] The monthly local newspapers had a circulation of 800 copies each, and an important number were sent to the Flores' diaspora in the US and Canada.

activity with cards (on each of which a criterion was written; see Figure 4.2, and Appendix 8). Focus groups (conf. Section 4.2.4) were tasked to agree collectively on a selection of economic, social and environmental criteria originating from a list of regional indicators (four economic out of nine, four social out of nine and four environmental out of eight). The proposed criteria were adapted from an exhaustive list of regional indicators, the Regional System of Sustainable Development Indicators (*Sistema Regional de Indicadores de Desenvolvimento Sustentável*) (Appendix 13.6). Thus, this exercise was framed by a regional report, which linked the project with regional/local policy making, and increased the consistency of the selected criteria.

Figure 4.2: Criteria selection activity (farmers' group)

On light blue cards are preselected criteria,
on orange cards criteria proposed by participants

Even if the focus groups were not intended as consultation processes, they helped to identify the main areas of concern (criteria chosen in five or four groups) to the local population, notably: farming activity, employment creation, lifestyle, healthcare services, waste management and land use and resource management. Since only five focus groups (producers, farmers, tourism, Lajes das Flores and Santa Cruz das Flores' focus groups) realised this activity, the criteria selected five times were indeed selected in all the focus groups. The criteria which were not selected in any focus group (business diversity, quality of housing and used water treatment) are also shown in Table 4.1. Along with the criteria selected only once, they represent areas of least concern. As well, in opposition to other projects involving MCM appraisal, criteria were not grouped in later analysis by the

researcher. Criteria grouping would have meant considering that the criteria proposed by different interviewees were comparable or equal, effectively manipulating the data. Avoiding this added to the objective of transparency as it prevented this intervention by the researcher.

Participants were also asked to propose criteria, although only two focus groups did so: the farmers' group and Santa Cruz das Flores' group (Table 4.2). The handicrafts woman considered that the criteria already selected were enough to appraise the scenarios; while the other two groups did not give any explanation of why they were not proposing criteria. Given that some of the criteria had already been proposed in the activity, and that only two groups suggested criteria, it was decided that the criteria proposed in these two focus groups were not going to be used in the multi-criteria appraisal interviews.

Table 4.1: Criteria selected by the focus groups

Economy	**Society**	**Environment**
Farming sustainability (4)	Employment creation (4)	Waste management (5)
Fisheries management and its sustainability (3)	Life style and health (4)	Sustainability of territory resources and ground use (5)
Wealth creation (3)	Health care services (4)	Biodiversity (3)
Tourism typology and profitability (3)	Cultural life and culture (2)	Appropriate water use (3)
Energy management (2)	Educational system (2)	Air contamination produced on the island (3)
Enterprises activity *health* (2)	Demographic evolution (1)	Produced water quantity and quality (1)
Sustainability and adaptation of the transport system (2)	Education level (1)	Typology and dangerousness of waste produced on the island (1)
Production added value and productivity (1)	Security (1)	Used water treatment (0)
Business diversity (0)	Quality of housing (0)	

Numbers in brackets indicate how many times each criterion was chosen in the focus groups. In the green cells are the criteria finally used in the multi-criteria interview.

Table 4.2: Additional criteria proposed in the focus groups

Additional criteria proposed in the focus groups
More population (*Mais população*) [farmers' focus group]
Infrastructure (*Infraestruturas*) [farmers' focus group]
Close the open dumps (*Acabar-lixeiras*) [farmers' focus group]
Organic farming (*Agricultura biológica*) [farmers' focus group]
Tourism (*Turismo*) [farmers' focus group]
Better use of local resources (*Aproveitar melhor os nossos recursos*) [farmers' focus group]
Lower environmental impact of human activity (*Menor impacto possível da actividade humana*) [St Cruz das Flores' focus group]
Island population well-being (*Bem-estar da população da ilha*) [St Cruz das Flores' focus group]
Need of infrastructures for the island (*A necessidade de infraestrutura para a ilha*) [St Cruz das Flores' focus group]

Indeed, asking lay citizens or non-specialists directly to propose criteria proved to be very challenging. In fact, one single session for commenting on the scenarios and proposing criteria was insufficient; familiarising lay citizens with criteria and appraisal concepts and asking them to propose criteria would have required a session dedicated exclusively to that. A brief presentation and definition of criteria was made in the two first focus groups (with the young adults and the fishermen) but with very limited results.

Questions about criteria also proved to be challenging for the facilitator as they were mostly highly technical questions that required specific preparation and material. Participants in the first focus group with young adults were asked to propose social, economic and environmental criteria, but this initiative did not succeed as the participants started proposing projects for the island, such as a local market, or commented on the need for balancing the primary sector, tourism and the environment. For instance, this last proposition could have resulted in a criterion called sustainable development but this would have been too vague to be used as a criterion. In the second focus group, with fishermen, additional efforts were made to induct the participants. It was mentioned at the beginning that the meeting was going to be an opportunity for them to propose criteria that were later going to be used in the scenarios' appraisal by key stakeholders; this was designed to give them the opportunity to start thinking about the criteria. At the very end of the meeting the question about the criteria was rephrased: "*what factors do you*

think are important for the island's development?" in order to prevent a much more direct and technical question such as: "*can you propose criteria for the appraisal of the scenarios?*" The aim of this rephrasing was to stimulate a debate that could elicit the identification of relevant criteria. Two fishermen gave their answers to the question: "*what we have been talking about*"[38] and "*It is what has been said and what is not going to be implemented immediately. It is to improve the port* [in Santa Cruz das Flores]"[39]. These unsuccessful early experiences led to the strategy of pre-selecting criteria from a list of regional indicators which was used for the remaining five focus groups.

As described above, stakeholders had to appraise the scenarios against the criteria proposed in the focus groups. However, they had to choose between discretionary criteria (those that were selected in only two focus groups) some of the criteria used in the appraisal. Additionally, to incorporate alternative analysis factors and to give freedom to the interviewees, they still could propose criteria for the appraisal (see Table 4.3 where the dark orange shaded cells correspond to core criteria, the lighter orange to discretionary ones and the light yellow to the criteria proposed by the interviewees, Table 4.4 presents the different participants in the MCM interviews). In total, twelve 'core', six 'discretionary' and seven 'proposed' criteria were used in the appraisal interviews. Therefore 48% of the criteria used were compulsory, 24% were discretionary and 28% were proposed by the interviewees. Most of the critera, approximately 75%, were indeed the same for the different interviewees. Interviewees were asked to comment on the criteria they were going to use so the interviewer could appreciate their perspective, and check if they had correctly understood the criteria.

[38] "*É o que temos estado falando aí*." Fisher - focus group
[39] "*É o que se falou e mais aqueles que não vão ser feitos de imediato. É o porto de abrigo*." Fishermen - focus group

Table 4.3: Criteria used in the MCM interviews

Economy	Criteria explanation
Agricultural sustainability (19)	Do the scenarios propose a sustainable farming model? The criterion is classified as economic but there are ecologic (environmental impact) and social implications to be considered.
Fisheries management and its sustainability (19)	Do the scenarios propose a sustainable fishery model? This economic criterion also has ecologic and social implications to be taken into account.
Wealth creation (19)	Does the economic structure implicit in the scenarios support wealth creation?
Tourism typology and profitability (19)	Will the tourist model proposed in the different scenarios be profitable and adaptable to the island's characteristics?
Energy management (11)	Does the scenario favour a sustainable energy management model?
Enterprise activity health (2)	Will the implicit economic structure support a robust network of enterprises? (Even if more specific this criterion was mostly considered as overlapping with the wealth creation criterion).
Sustainability and adaptation of the transport system (9)	Does the scenario foster a transport system both adequate and resilient for the island?
Government incentives (1)	Proposed by the regional manager of air and sea transport: subsidies and support for economic activity.
Handicraft development (1)	Proposed by the local manager of the entrepreneurship support service: is the handicraft sector growing?
Society	
Employment creation (19)	Does the scenario foster employment creation?
Lifestyle and health (19)	Is the scenario favourable to a high standard of lifestyle and healthy living? (this very subjective criterion sometimes overlapped with healthcare services)
Healthcare services (19)	Does the scenario support improvement of healthcare services on the island?
Cultural life and culture (14)	Is the scenario favourable for fostering cultural activity?
Educational system (14)	Will the scenario foster the education system? (education policies at national level)
Demographic evolution (10)	Will the scenario be favourable for population growth?
Population reintegration (1)	Proposed by the regional manager of natural area conservation services: capacity to re-incorporate the people who left the island to work or study away.
Social exclusion (1)	Proposed by the University professor: Does the scenario create social exclusion and/or poverty, or does it prevent it?
Environment	
Waste management (19)	Will the scenario foster an adequate waste management system?
Sustainability territory resources and ground use (19)	Does the scenario respect the island resources and convenient ground use? (this criterion was considered as very general)
Biodiversity (19)	Does the scenario conserve island biodiversity or is it a danger for its maintenance?

Appropriate water use (19)	Does the scenario allow a correct and sustainable use of the water resources?
Air contamination produced on the island (19)	Will the scenario propose a social and economic model that will minimise air contamination (mostly refers to CO_2 from transport and contamination originated by livestock)
Landscape (1)	Proposed by University professor: does the scenario preserve and value the traditional landscape or not?
Population involvement (1)	Proposed by the local restaurant manager: Does the scenario create the conditions that will involve the local population in the management of the island?
Marine area protection (1)	Proposed by the manager of the national nature conservation association: important for tourism development and conservation.

In brackets the number of times each criterion was used in the MCM interviews.

4.2.3 Step 1: Scoping interviews with decision-makers, civil servants and key informants

Semi-structured scoping interviews aimed at collecting specialised stakeholder ideas of what they envisaged as the potential future development for the island. Stakeholders from diverse areas were pre-selected and contacted in advance in order to ensure the inclusion of a diversity of perspectives. Fifteen potential interviewees were initially contacted and, at the end of their interviews, they were asked to propose possible interviewees to widen the range of participants and perspectives (Section 4.2.3.1). The objective of the scoping interviews' was to "give voice to" (Cloke *et al*, 2004, p.151) this *a priori* informed population. Their rather privileged status of decision-makers or key informants already gave them an empowered voice in the community; however the goal was to ask them a rather unusual question as they were invited to envision the island in the future, abstracting their analysis from their daily business or policy-making perspectives. By this means 23 scoping interviews (to 24 respondents[40]) informed the project from a varied range of perspectives. The next sections develop how the interviewees were recruited and contacted (Section 4.2.3.1), how the visions for the island were gathered in the scoping interviews (Section 4.2.3.2) and, finally, the use of 'note sheets' to facilitate these semi-structured individual interviews is presented and explained (Section 4.2.3.3).

[40] One interview was carried out with two people (the ecology centre team).

4.2.3.1 Interviewees' selection

The scoping interviews took place in April 2009, when 24 decision-makers, civil servants and key informants (Table 4.4) were interviewed in individual interviews.

Table 4.4: Decision-makers
civil servants and key informants interviewed

Interviewee (pseudonyms)	Area of activity[41]	Position	Civil servant/ independent	Flores/ Azores/ Portugal	Age group (in 2009)	MCM int.
Daniel A.	Tourism	Director of service	Civil servant	Azores	Over 50	Yes
João B.	Entrepreneurship	Director of service	Civil servant	Azores	Under 40	Yes
Marta C.	Air and sea transport	Director of service	Civil servant	Azores	40-50	Yes
Jaime D.*	Environment	President	Independent (NGO)	Azores	Under 40	Yes
Pedro E. §*	Entrepreneurship	Service employee	Civil servant	Azores	(40-50)	No
Armando F.	Environment	Director of service	Civil servant	Azores	Under 40	Yes
Joaquim G.	University (geography and economy)	Head of department	Independent (academic)	Azores	Over 50	Yes
Raul H. §	Agriculture	Director of service	Civil servant	Azores	(40-50)	No
Maribel I.*	Culture	Library manager	Civil servant	Flores	Under 40	Yes
Luca J.*	Tourism [Historian]	Guest house manager	Independent	Flores	40-50	Yes
João-Alberto K.*	Tourism [Banker / Journalist]	Restaurant manager	Independent	Flores	40-50	Yes
Joana L. and Jéssica L.	Environment (education)	Service employees	Civil servant	Flores	Under 40 (both)	Yes[42]
Eleonor M. §	Local representative	St Cruz representative	Civil servant	Flores	(Under 40)	No
António N.	Local representative [in charge of culture]	Lajes representative	Civil servant	Flores	Over 50	Yes
Maria O.*	Entrepreneurship	Local director of service	Civil servant	Flores	Under 40	Yes
Carmen P. §*	Youth	Association	Independent	Flores	(Under 40)	No

[41] In brackets: alternative area of activity (when relevant)

[42] The appraisal interview to the *ecoteca*'s team was the only one undertaken with two people simultaneously. The interviewees decided together the scores they were given. This variant was the opportunity to test the appraisal method when applied to a couple or a small group. It found to allow discussion between the participants, they could debate the ideas and find consensus while learning from each other. It was obvious that the colleagues Knew each other very well and that they understood their points of view without having to explain their ideas at length or, simply, most of these were taken for granted. Nevertheless as the interview was challenging they had to confront their perspectives on some points where they did not necessary agree.

	association	president	(assoc.)			
Alberto Q.*	Environment [farmer]	Service employee	Civil servant	Flores	40-50	Yes
Tiago R.*	Culture	Museum curator	Civil servant	Flores	40-50	Yes
Isabel S.*	Economy [Guest house manager]	Freelance consultant	Independent	Flores	Under 40	Yes
Francisco T.*	Entrepreneurship	Association president	Independent (assoc.)	Azores	Over 50	Yes
Rui U. §*	Fishermens association	Association president	Independent (assoc.)	Flores	(Over 50)	No
Teresa V. §*	Island association [regional government]	Association member	Independent (assoc.)	Flores	(40-50)	No
Ricardo W.	Environment	Association managing director	Independent (NGO)	Portugal	40-50	Yes
Sérgio X. §§	Agriculture [local representative]	Local director of service	Civil servant	Flores	40-50	Yes
Artur Y. §§	Infrastructures and land transp.	Local director of service	Civil servant	Flores	Over 50	Yes

***** Interviewees contacted through the 'snowballing' process
§ Interviewed in the Scoping Interview but not the MCM interview (3rd step)
§§ Not interviewed in the scoping interview (1st step)

The preparatory phase of the scoping interviews implied stakeholder selection. A previous list of 15 possible interviewees was decided considering the *PROTA*'s *specific sector-based rules* (*SRAM*, 2008b, p.59) (Chapter 3: Section 3.3) which define the course of regional investments which have an impact on land management. The aim was to guarantee participation from key areas (tourism, environment, land settlement, agriculture, forestry, industry/handicrafts, employment/qualification, fishery, the Azorean University and local councils' representatives) that affect the island's territorial management; these interviewees were contacted by phone and by email between January and March 2009, and a short document explaining the aim and the outline of the project was sent to them (see Appendix 4.1: Communication 1). Five of them could not be interviewed but, in order to reach individuals not previously considered, the stakeholders were asked to propose possible alternative candidates. This 'snowballing' process allowed contacting a further 13 individuals who were mostly civil servants and independent local key informants. Their perspectives were relevant as they gave informed points of view on the island and because some of them covered areas that were not previously contemplated, such as culture (the museum curator and

the library manager) and local associations (a youth association, a Flores Island fishermen's association and an association of the friends of Flores Island). In addition to the explanatory email a phone explanation of the objectives of the interviews was made to the interviewees contacted through the 'snowballing' process when possible. Because the time allocated for this step (one month) was limited these interviewees were briefly introduced to the objectives of the project. The stakeholders were all based on the island (13) or the Azores (nine) except for the national environmental association representative who was based in Lisbon (although he was himself Azorean, the scoping interview with him was done via phone while the MCM interview took place in Lisbon in December, 2009).

The group which was least well represented among the stakeholders were those related to social affairs. This was in part because specialist stakeholders or decision-makers in this area were not initially targeted, as social affairs are not treated in the *PROTA*'s *specific sector-based rules*. This did not mean that social issues were not addressed but that specialised stakeholders or key informants in that area were in a minority; indeed, thanks to the 'snowballing' process, people involved in the area of culture and education were eventually interviewed.

One lesson learned from the participant stakeholder selection was that, although all fields of expertise were initially targeted, incorporating all of them depended on several uncontrollable factors, such as the non-availability of the potential participant. The 'snowballing' strategy helps fill some of these gaps, but it generates situations where some participants are integrated later into the project: possibly biasing the outcomes as these interviewees do not have the same time available to reflect on the subjects treated in the interview. This seems a reasonable presupposition, although it is hard to prove, as it is not possible to be certain how well each individual participant prepared for the interview.

The late incorporation of two new stakeholders in the final appraisal step (Step 3) needs to be mentioned and to be reflected on here. The two late incorporations were a local manager of the Regional Secretary of Science, Technology and Infrastructure who could not be interviewed in the scoping interviews round, and

an island manager of the Regional Directorate for Agricultural Development who replaced the Regional Directorate for Agricultural Development central offices' representative who participated in the scoping interviews (Table 4.4). In both cases they were informed local civil servants, with senior responsibilities in their respective services. While they might not have had an in-depth knowledge of *PReDSA*'s scenarios or other regional reports (such as the *PROTA* or the *POTRAA*), they knew the island very well, they were proficient in their field of activity and they had received information on the project ahead of the interview (Appendix 5.3: Communication 3). This is why, as an interviewer, it was challenging to ascertain whether their late enrolment in the project influenced their appraisal or not. Their level of motivation was comparable to the other interviewees', however it is worth noting that they both gave similarly high levels of uncertainty in the scores (conf. to Section 5.4.1.1): this could be influenced by a lack of preparation or focus or it could just be a consequence of their appraisal style.

4.2.3.2 Gathering visions and creating foresight scenarios

The semi-structured individual interviews invited the stakeholders to develop their personal vision; allowing enough flexibility to develop aspects that were not necessarily contemplated in the script of the interviews (the script of the scoping interviews is presented in Appendix 10, and Appendix 11 provides a transcription of a typical scoping interview). In the first round of questions, related to their vision for the island's development, interviewees were asked to imagine how they would like Flores to be in 2030. Interviewees were directly asked to develop their vision for the island's development; the aim was to give them freedom to express their points of view without constraining questions and avoiding possible boundaries. But some interviewees found it hard to start by presenting their general vision and they required more precise questions that could guide their analysis. As a consequence, they were asked to develop their vision for particular sectors: tourism, nature conservation, agriculture, forestry, fishery, industry and trade, information technologies, energy and education. Questions about these strategic sectors aimed at having a general, and as complete as possible, idea of the island's development potential. In fact, interviewees that, in the first instance,

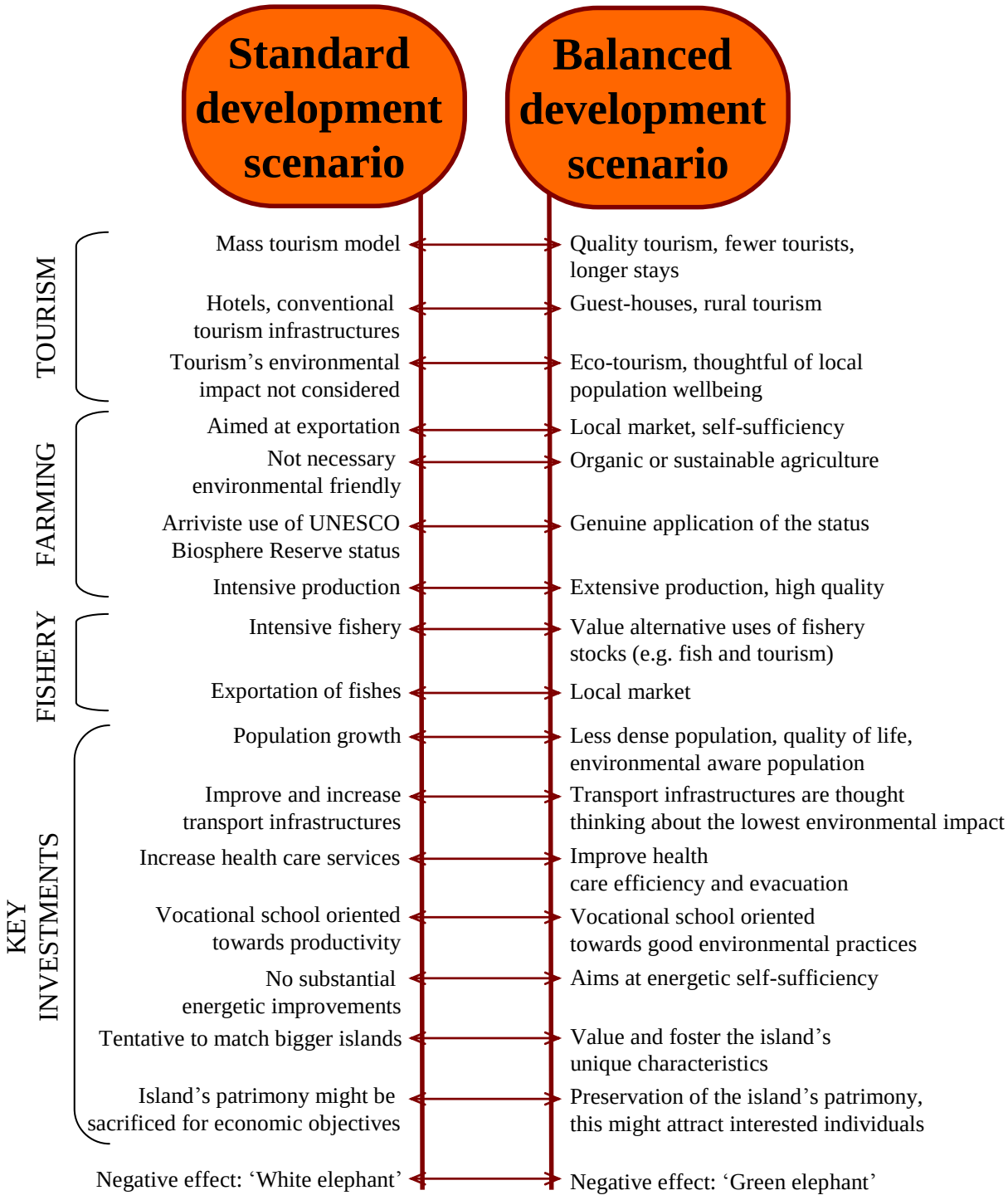
did not have problems developing their vision were also asked to go through the same list of sectors, with the aim of securing a consistent and as complete as possible data collection.

The interviewees were also asked to comment on *PReDSA*'s five institutional scenarios (see Chapter 3: Section 3.3): *Hotelândia* (tourism development), *Lactogenia* (dairy farming development), *Ecotopia* (nature conservation based development), *Sociopolis* (welfare state) and *Infocracia* (development through IT solutions), and the relevance of the *PROTA* (*Regional Territory Planning for the Azorean Region*) for the island's development. A minority of interviewees had an informed idea on *PReDSA*'s scenarios therefore most of them had to be introduced to these; therefore their analysis was built on a general idea. These sector-based scenarios permitted an exploration of fields of activity or areas of development that were not necessarily previously mentioned, they also required working on pre-built institutional foresight scenarios; framing the project in regional policies. Often the interviewees explained their vision for the island as a combination of different *PReDSA*'s sector-based scenarios. In addition to this, wider questions on regional policies' relevance for Flores Island were asked: they were asked if they considered that, generally, regional plans fitted the island's needs and specificities.

Additional questions in relation to factors that could affect the island's development were asked, such as the effect the global economic recession (starting in the late-2000s) could have on Flores' development, changes to the government, the Natural Island Park creation and the possible (at that time) declaration of a UNESCO Biosphere Reserve, and the effects of conceivable changes in European subsidy policies. This informed the island's capacity to adapt to negative disruptions or to take advantage of the opportunities presented. Finally, they were asked to propose possible projects (public and private) that would be congruent with their vision for the island (project activity is presented in Appendix 15).

Two main potential futures arose from the scoping interviews (see Chapter 5: Section 5.2.1, Table 5.1). One consisted of a continuation of the existing model of development and an attempt to converge towards the archipelago's main islands' (São Miguel, Terceira and Faial) socio-economic models based on the intensification of economic activity and in economic growth. The other option favoured a type of development more conscious of the environmental constraints, and the requirement for Flores to follow an adapted model of development. Two purpose-made scenarios were drafted from the scoping interviews following these two main tendencies, respectively a Standard development scenario (SDS) and a Balanced development scenario (BDS). Each scenario groups the arguments and examples (or counter-arguments and counter-examples) that correspond to these alternative potential futures; Figure 4.3 schematises how the draft scenarios were built. For example, interviewees mentioned the possibility that Flores could develop a mass-tourism model similar to São Miguel Island; the alternative option was the development of nature and rural tourism. The former model could have a huge environmental impact due to the intensification of the tourism industry and the construction of new hotels. The latter targets rural and eco-tourism and involves ideally a lower environmental impact, and even the recovery and valorisation of the island's natural and cultural heritage. Similar strategies for scenario building were used for agriculture, fishery and key investments. By means of these classifications and associations the draft scenarios were therefore composed. Then they were presented as a narrative with the aim of linking the ideas and proposing a reader-friendly format (see Appendix 4.2 for the version in Portuguese). These scenarios do not represent the main step in the analysis but they are essential in the methodology as they constitute the basis for group assessment in the focus groups and the MCM individual appraisals. As proof of their relevance for the purpose of the research they were acknowledged as feasible and plausible in the focus groups and the MCM interviews (SDS and BDS were preferred to sector-based scenarios and they were thought to be more pertinent for the island, see Chapters 5 and 6).

Figure 4.3: Initial inputs to build SDS
and BDS draft scenarios



However, there are some methodological limits to how the scenarios were put together as it is a rather researcher-led exercise in which the researcher has to choose how to build the scenarios and what information is in them. But 20 out of 21 interviewees agreed that the way in which the scenarios were developed was

correct. The library manager accepted that one individual, in this case the researcher, could be the catalyst of the research participants' contributions:

> " Researcher
>
> *It is arbitrary because it is me who chooses* [the scenarios]... […][43]
>
> Interviewee
>
> *We must start somewhere, mustn't we? If we have to wait that people meet together… this would never happen."*[44] (local library manager [Maribel I. - scoping interview])

4.2.3.3 Use of note sheets to explore and display interviewees' visions

The participant stakeholders were invited to support their visions by using a note sheet where they could develop or express their ideas in a more visual way (Figure 4.4 represents a template, this material is presented in its totality in Appendix 3 and analysed in Chapter 5: Section 5.2.2). The aim of this note sheet was to use it to present to the focus group participants the stakeholders' key ideas in a more direct and visual way. To make it more impactful interviewees were asked to use the colours that they found most expressive; they were also free to draw or to create explanatory diagrams. So the initial role of the note sheet was to complement and illustrate the points of view presented at the interviews, providing an opportunity for interviewees to emphasise the points they considered crucial.

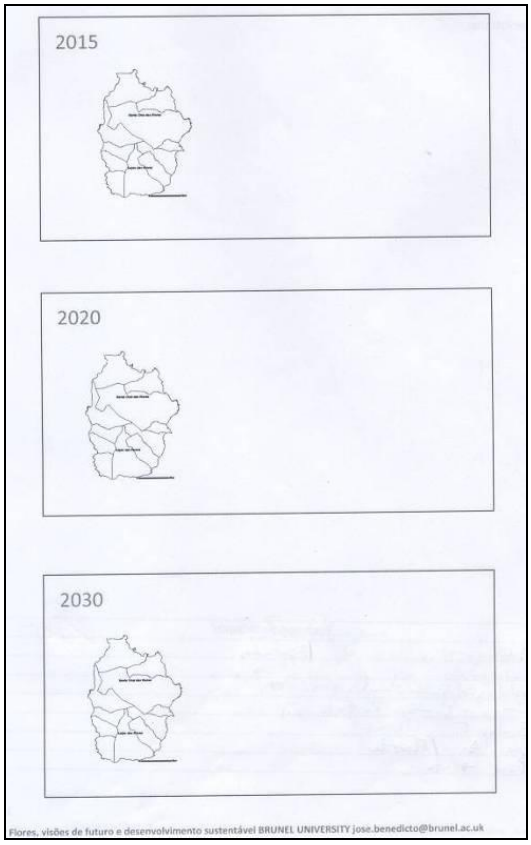
[43] [...] is used where parts of quote is omitted at the discretion of the researcher as it did not contribute to the overall understanding of the meanings intended by the speaker.

[44] "*E um bocado arbitrário, porque sou eu que também escolhe...* [...].

Interviewee

Temos que começar por um lado, não é? Se tivéssemos que estar à espera das pessoas se juntassem... isso nunca ia acontecer." (local library manager [Maribel I. - scoping interview])

Figure 4.4: Supporting note sheet as presented to interviewees in scoping interviews (original format: A4)



4.2.4 Step 2: focus groups interviews with lay citizens

> "Group discussion is particularly appropriate when the interviewer has a series of open ended questions and wishes to encourage research participants to explore the issues of importance to them, in their own vocabulary, generating their own questions and pursuing their own priorities."
>
> Kitzinger, 1995, p.299

These indications given by Kitzinger on group discussion summarise the role that focus group dynamics had in the present research (conf. Chapter 2: Section 2.2.2.3 for a review of focus groups method). As reviewed in Chapter 2 (Section 2.2.2), incorporating locals' points of view in planning is acknowledged to be important to frame orthodox scientific perspectives (Rydin, 2007a, p.54). In the present

research, the focus groups had different objectives. It was an opportunity for local lay citizens to comment and reflect directly on the draft scenarios developed from the scoping interviews (conf. Chapter 5: Section 5.3.2) therefore they could contribute directly to the development of the final scenarios. Simultaneously, they aimed at allowing information-sharing between research participants: from the decision-makers and key informants to the lay citizens in the focus groups and between participants in the focus groups. In addition to that, criteria selection (Section 4.2.2) allowed them to state in a more explicit way the factors they thought should have more priority for the island's sustainability. Therefore focus groups were formed to meet a triple objective: to promote reflection and internal debate on sustainability issues among lay citizens, information-sharing to inform lay citizens, and to gather information on local concerns on sustainability (through reactions to the drafts scenarios and the selection of criteria for the appraisal).

In the present research the focus group technique was considered more appropriate than in-depth discussion groups (Harrison and Burgess, 1994; Burgess, 1996; Harrison *et al*, 1998). As developed in Chapter 2: Section 2.2.2.3, in-depth discussion groups are more appropriate in cases where the research participants explore themes that require confidence in each other. This technique implies convening several group meetings in order to build the group dynamics that enable treating these sensitive themes. As a consequence the organisation of in-depth discussion groups requires more means and time than focus groups (Holbrook and Jackson, 1996). However, in this research more than one meeting for each group was not necessary, mainly because the combination of the themes treated and the time horizon meant that the discussion would not be particularly sensitive or controversial. It was also considered that the non-technical approach did not require any specific induction or training on the issues at stake. Moreover, as participants were recruited from small closed communities, the likelihood that they knew each other was high, therefore the presentation step was redundant (this was confirmed in the fieldwork, conf. Chapter 5: Section 5.3.1). Therefore, *a priori* more than one group meeting was not considered to be necessary to fulfil the objectives of the focus groups. However, it was concluded *a posteriori* that a

series of two meetings would have been preferable (mainly to discuss the criteria selection activity) (conf. Section 4.2.2).

The focus group participants were asked to criticise the draft scenarios and to register their approval or disapproval. Focus group contributions were later embedded into the two scenarios built for the purpose of the project, which were adapted to reflect both stakeholders' and lay citizens' perspectives. In the final version of the two scenarios, focus group outputs were used to enrich the original text of the scenarios, with focus group contributions appearing as quotes in blue (see Appendix 12, and Appendix 4.3 Communication 3 for the version in Portuguese). This facilitates identification of the sources, and highlights the selected lay citizens' contributions. It also brings more transparency to the process, indeed one of the aims of the research project is to present participants' visions as clearly as possible: stakeholders have to be able to identify which are the lay citizens' contributions, allowing mutual feedback within the process.

4.2.4.1 Focus group participants

Seven focus group sessions with local inhabitants took place in September and October 2009. In total 30 people participated in these group meetings to discuss the draft scenarios for the island (see Table 4.5); these 30 participants represented almost 1% of the island's population. A total of 40 lay citizens was aimed for (an average of six participants per focus group), but unfortunately the participation was much lower than expected in three focus groups (two focus groups with only one participant and one with three). The groups with only one participant posed a methodological dilemma explained in the following paragraph. Participants were given an explanation of the project, its aims and the draft scenarios, ahead of the focus groups (Appendix 4.2: Communication 2). In four of the focus groups the participants were convened by sector of activity: fisheries, tourism, agriculture and industry/handicraft. These were "natural focus groups" (Conradson, 2005, p.134) where the participants were "drawn from a pre-existing social group". The benefit of this is to create the conditions that reproduce conventional and informal group discussions. As Kitzinger (1994) observes: "it is useful to work with pre-existing groups because they provide one of the social contexts within which ideas

are framed and decisions made" (p.105). Krueger (1994) considers that similarities of situations within the groups facilitate the open discussion of issues among the group participants.

The focus groups with only one participant (industry/handicrafts and Santa Cruz das Flores) were unexpected situations and this meant that the focus groups became individual interviews. These participants could not be combined with other focus groups (one of them could not attend again, and the other was the participant in the last focus group scheduled and therefore it was impossible to combine it with another group). In compensation for the impossibility of forming a focus group the participant/interviewee could develop in depth her/his impressions on the draft scenarios, providing useful data to develop the final versions. In the same way they were also able to select the criteria to be used in the subsequent multi-criteria step (criteria selection is developed in Section 4.2.2), and the participants could also undertake the activity consisting of appraising the projects for the island (Appendix 15). To identify them they will be referred in the thesis as focus group interview (FGI).

Table 4.5: Focus groups

Focus groups	**Number of participants**
Young adults	6
Fishermen	8
Industry/handicrafts FGI	1
Farmers	3
Tourism	6
Lajes das Flores	5
Santa Cruz das Flores FGI	1

Participants were individually recruited to the meetings and when possible they were briefed individually before the focus group in order to explain its purpose. The participants in the tourism focus group and the industry/handicrafts FGI were contacted directly through the local entrepreneurship support service that provided their contact information. Fishermen and farmers were contacted through the local fishermen's and farmers' associations. One further focus group was composed of young adults; these were approached through the ecological centre team that informed the author about potential participants. These participants were not

actively involved with environmental actions or the ecological centre activities but they were proposed because they had previously shown an interest in participatory and consultative processes and the ecological centre team considered that they were likely to agree to participate in the research project.

Two additional focus groups were organised to convene inhabitants independent of their sector of activity. These were "assembled focus groups" (Conradson, 2005, p.135), gathering together individuals from different backgrounds. However, due to the small size of the population, these "assembled" groups were in fact made up of participants who already knew each other. In one of these assembled focus groups only one individual agreed to participate (Santa Cruz das Flores FGI). These two 'open' meetings were publicised using A3 and A4 posters placed in the 11 parishes (see poster in Appendix 7).

4.2.5 Step 3: Multi-criteria analysis

Participative foresight scenario mapping consists mainly of a novel use of the MCM appraisal method. Previous uses and the novelties incorporated into the methodology are developed in the following sub-sections. But first Section 4.2.5.1 explains how the decision-makers, key informants and civil servants were involved in the MCM interviews.

4.2.5.1 MCM interviewees

As the process was designed to be iterative, it was important that MCM interviewees were those who had been involved in the scoping interviews (see Table 4.4). However, six of them could not be interviewed in this last step, and two new stakeholders, not initially recruited in April 2009, were interviewed instead in the MCM interviews. The reasons why some stakeholders withdrew from the project are hard to assess: it could have just been lack of time at the moment of the interview (this was confirmed for three of them) or a lack of interest in the process.

All the MCM interviewees were contacted prior to the meeting to give them an explanation of the appraisal process. A document presenting the two scenarios for the island, the five *PReDSA* scenarios, the list of criteria and the aim of the interview, was provided in a printed or emailed version (Appendix 4.3: Communication 3 for the original version in Portuguese). The interviewees were all asked to prepare for the interview by reading this document and start thinking about the scenarios and the criteria to be used in the appraisal. In anticipation of the fact that some stakeholders would not have fully read Communication 3, they were given the scenario headlines (Table 4.6, the scenarios are treated in depth in Chapter 5) at the beginning of the MCM interview. This assured that they had a general idea of the scenarios they were appraising. In practice they all, even if briefly, read these headlines.

Table 4.6: Scenario headlines (used as support in MCM interviews)

Scenarios		**Description**
Standard development scenario (SDS)		Scenario of development through public investment in infrastructure, enabling a more intensive primary sector that will permit export of some agricultural products (bovine meat, milk and milk derivative products) and a more standardised tourism model (capitalising on the island's opportunities but not specifying a minimum environmental impact). Increase in economic activity (public and private) and employment.
Balanced development scenario (BDS)		Scenario of the development through high environmental quality standards and valuing local patrimony associated with nature and living on the island. Carefully chosen investments are fundamental, as well as infrastructure aimed at valuing the island, prioritising local population and thinking in tourism. They would also specify a minimum environmental impact, as well as conservation, improving and valuing the ecosystem services and reduction of external dependence.
***PReDSA* scenarios**	***Hotelândia***	Based on tourism development and four action areas: regional quality products, natural patrimony quality, cultural patrimony differentiation and air and sea transport.
	Lactogenia	Based on the excellence of farming development and four action areas: regional quality products, farming potential, subsidies and EU policies.
	Ecotopia	Based on the protection and natural patrimony value and four action areas: geothermic resources, natural patrimony quality, pressure on natural resources and geological and tectonic risks.
	Sociopolis	Based on the development of social cohesion with youth population, EU subsidies and education as action areas.
	Infocracia	Based on information society. Four action areas have special relevance: geostrategic position, youth population, Azorean Diaspora and outermost region's characteristics.

4.2.5.2 Previous uses of MCM method

MCM's first use was to assess risks in genetically modified crops (Stirling and Mayer, 1999; Stirling and Mayer, 2000; Yearley, 2001; Stirling and Mayer, 2001; Mayer and Stirling, 2002, and to a lesser extent Horlick-Jones *et al*, 2004). This pilot research provided a multi-perspective analysis of the risks related to genetically modified and other crops (organic and conventional agriculture). A series of specialists from different backgrounds (agriculture and food industries, academic scientists, government safety advisors and religious and public interest groups) each appraised predefined and proposed options for agricultural practices. One of the conclusions on the process was that it allows a more holistic risk assessment than conventional techniques (Stirling and Mayer, 2000). Even if MCM aims at analysing a single technology or policy (for instance GM crops) it requires comparing the options with alternative solutions, enabling a fuller appraisal, and producing a broader picture of the available alternatives. Interviewees' criteria selection is also a way to enlarge the scope of the study, by incorporating unexpected parameters and giving rise to new issues or themes for discussion.

More recently, this appraisal method has been used in the field of energy production by a panel of experts from a wide range of areas, with the aim of informing on hydrogen alternatives. The United Kingdom Sustainable Hydrogen Energy Consortium (UK-SHEC) led research with the purpose of developing and appraising six scenarios of hydrogen use (McDowall and Eames, 2006; McDowall and Eames, 2007; Eames and McDowall, 2010). Eames and McDowall acknowledge that the MCM appraisal method reveals issues that were not considered at the beginning of the project, and they also propose the development of a combination of scenario building and multi-criteria appraisal techniques to identify technology choices.

Another field where MCM has been used is health (specifically the appraisal of obesity policy options). The research done in the context of the Policy Options for Responding to the Growing Challenge of Obesity Research Project (PorGrow) involved nine European countries (Stirling *et al*, 2007). The project provided the

opportunity to produce a cross-national analysis of the different strategies for reducing obesity (Millstone and Lobstein, 2007). This transnational project permitted comparison of core and discretionary policy options grouped into clusters. The outcomes were grouped following European regions or following the different interviewees' professional background in order to identify different patterns. In addition to conclusions related to strategies against obesity, the project also provided an opportunity to study the interviewees' perspectives on the process and to demonstrate the feasibility of transnational applications of the appraisal methodology. Recent projects on nanotechnologies (Foss Hansen, 2010) and human embryonic stem cells (Morgan, 2008) have also used or considered the use of MCM appraisal.

As introduced in the literature review (Section 2.4.1.5), the deliberative mapping project (Davies *et al* 2003; Davies, 2006; Burgess *et al* 2007) took MCM a step further by embedding it into a larger participative exercise. The aim of the project was to test the capacity of deliberative approaches for discussion of complex scientific issues. The process was open to lay participants, grouped into panels that met several times at different stages of the research. In parallel to these sessions, specialist stakeholders were interviewed in order to appraise 10 different options. Deliberative mapping was the first project involving lay participants in MCM appraisal and it examined their capacity to discuss such complex questions. The project presumed a learning process where citizens were informed about the key concepts, empowering them to discuss these complex issues with the specialists.

A typical MCM process takes place in a computer-based interview where the interviewees evaluate a series of options using the criteria they select themselves (identify criteria step). The interviewees have to assess the scenarios providing a maximum and a minimum score for each criterion. The maximum scores correspond to optimistic visions and the minimum scores to pessimistic ones. This reflects the variability - uncertainty - between an optimistic and a pessimistic situation; the wider the gap, the higher the associated uncertainty. Once the appraisal of uncertainty is done the interviewees have to assign weights to the

criteria; by this process characteristics are prioritised, influencing the final outcome of the appraisal. Finally, the interviewees have to analyse the resulting graph, which includes all the scores and criteria weights they gave in the interview ("consider ranks" step). If necessary they can reconsider the visions, the scores, the criteria and their weights. This possibility is crucial in the appraisal because it empowers the interviewees to redefine their perspectives or confirm them. Figure 4.5 schematises the process followed during a standard MCM appraisal interview.

Figure 4.5: The multi-criteria mapping process
(source: McDowall and Eames, 2006)

Although the identification of a suitable multi-criteria method for the research objective is required (Kiker *et al*, 2005), it was also necessary to adapt the method for the present research case as these modifications are appropriate to answer to specific research questions. The "fitted for purpose" (Davies *et al*, 2003; McDowall and Eames, 2006) appraisal method designed for the present research project is now presented.

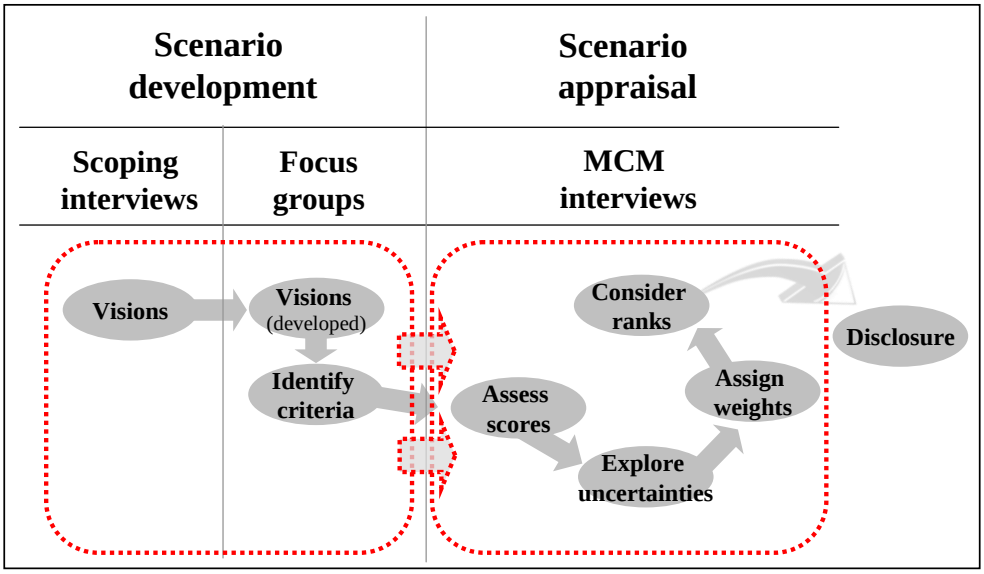
4.2.5.3 Novel use of multi-criteria mapping method

Until now MCM has exclusively been used in cases where interviewees have technical knowledge on the subject being studied. In DM the process incorporated the induction of lay participants on the issues at stake, and while this previous learning stage hardly made them experts on the subject, it focused on providing them with sufficient knowledge to be able to understand the issues discussed in

the process. This involved specialists in the appraisal of specific issues, for example, the development of an energy source, food security, and health or medical issues. Instead of appraising the effects of a policy or the implementation of a project, MCM was used here to appraise seven scenarios for sustainable development. Development policies meet the challenges pointed out by Stirling (Chapter 2: Section 2.4.1): for a development plan for an area where it is impossible to predict the future, the difficulty of understanding natural and social facts (and economic factors), and the decision-makers have to consider the existence of alternative paths and objectives.

The MCM interview was also adapted to incorporate feedback from Flores' lay citizens (see Sections 4.2.2 and 4.2.4). Aiming for transparency, the objective was to propose a simple and straightforward model allowing citizens' participation, reflectiveness and information sharing. The process used in this research also innovated the 'division' of the 'tasks' among participants. Whereas in other cases where the MCM appraisal process is contained within each single interview, here the appraisal process has been spread throughout the three different steps of the proposed methodology. Figure 4.6, adapted from McDowall and Eames (2006), shows how the appraisal process was distributed.

Figure 4.6: Research framework
(adapted from: McDowall and Eames, 2006)



The first characteristic of this application, as explained previously, was that MCM interviewees were not required to propose scenarios for the island, but to appraise a given list of scenarios. The interviewees had to appraise scenarios built from their previous contributions in the scoping interviews and which had been validated by lay citizens (for BDS and SDS) (Section 4.2.4) using criteria previously selected by lay citizens (Section 4.2.2). While these factors constrained the interviews, they did require the stakeholders to take account of local concerns and priorities.

In addition to the graphs used in this thesis (individual maps - the ranks for participants -, extrema and means, mean and relative uncertainty, weight extrema for perspectives, summed score for issue and criteria and the mean ratio of uncertainty, see Appendix 5) MCM Analysis software produces charts showing the mean interval of uncertainty for perspective and issue, and the mean and median ambiguity for perspective and issue. These last options are not presented in the thesis because they did not provide relevant information for the analysis.

The criteria weighting, the penultimate stage of the appraisal interviews, also differed from previous uses of the MCM method. In previous applications, interviewees had to distribute 100 points between the criteria they were using in the appraisal. One of the characteristics of the present project was that interviewees had to appraise at least 15 criteria, much more than in other MCM projects. In the project on genetically modified crops the participants had to use up to 12 criteria (Yearley, 2001), in the project on the hydrogen scenarios the 15 participants each found an average of six to seven criteria (McDowall and Eames, 2006), in the PorGrow project interviewees used between two and nine criteria, and in the deliberative mapping project the average was seven (17 specialist interviewees proposed 111 criteria) (Davies *et al*, 2003). As interviewees were dealing with a high number of criteria, weight attribution was more complicated than in other MCM applications. Therefore instead of attributing weights, stakeholders were asked to score each criterion up to 100 according to the importance they considered each had for the island.

As in other projects using the MCM method (De Marchi *et al*, 2007), some interviewees found it hard to understand the logic of the scoring and a reiteration was often needed, thus prolonging the interview. As well, due to the length of the interviews, never less than 100 minutes long, five of them were interrupted[45]. However, to compensate for the disruption created, this seemed to help interviewees develop their individual reflection by enabling them to benefit from more time to think about the subject(s) under discussion, the scoring process, and the differences between low and high scores. Therefore, these disruptions were not necessarily negative for the appraisal process.

The two first steps of the conventional MCM interview had been previously undertaken in the first phase of the participative foresight scenario mapping methodology. In this adaptation of the MCM method the stakeholders had only to assess scores, explore uncertainties, assign weights and consider the final outputs of the interview. Chapter 5 reviews in depth how the interviews were realised. The MCM interviews and the focus groups presented an opportunity to gather varied and rich data on the preferences for Flores' future. These outcomes were analysed following the areas of main concern pointed out by the lay citizens and the recurring themes in the note sheets completed by the stakeholders in the scoping interviews.

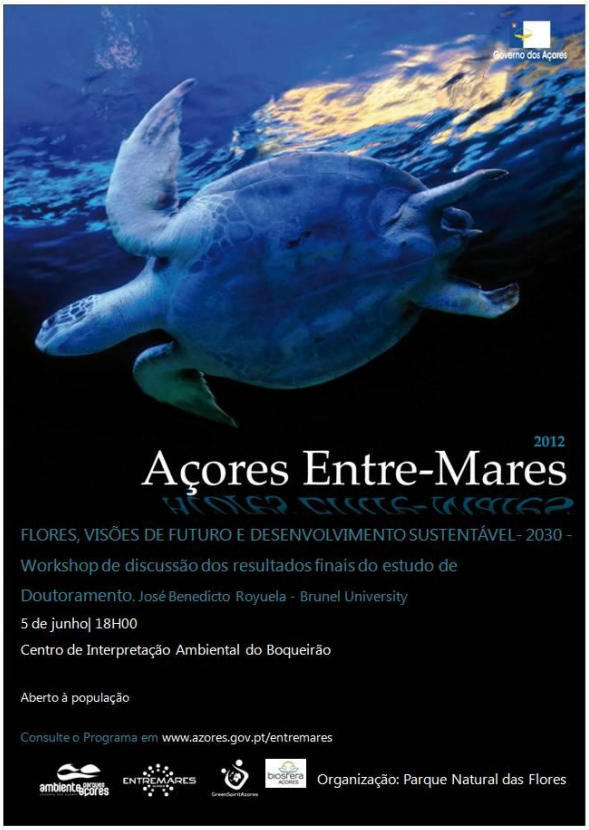
4.3 Final dissemination workshop

As a fourth step, corresponding to the disclosure phase (Figure 4.6), a dissemination workshop was set up to convene the participants and the general public. The workshop was held in the context of a series of regional seminars held by the Azorean Government - '*Açores Entre-Mares*' - www.azores.gov.pt/entremares - (see Figure 4.7). The aim of the two-hour event was to disseminate the results of the research concerning the preferred strategies for sustainability in Flores Island to the participants, to instigate a debate on their

[45] In most cases this was due to lunch breaks. Most of the interviewees scheduled the meeting at the end of the morning, when such a circumstance favoured these interruptions.

relevance and, with the population, to formulate an agenda of activities to improve and decide more concretely the lines of development following the results of the participative foresight scenarios mapping experience. In addition to this debate on the outcomes of the research, two activities were designed to involve participants in a more active way. The first consisted of reading and commenting on the scoping interview note sheets (Section 4.2.3.3) which were disclosed in posters. Then the participants were involved in an activity which consisted of making them reflect on the island's potential by means of a group exercise concerning the identification on a map of the positive and negative points found on the island. The 14 participants were actively involved in the activities and the final discussion. The themes included problems linked with tedious bureaucracy which demotivates people, the role of the natural island park to value the natural heritage and the local economy (e.g. local handicrafts), the need of economic and political support for rural tourism, and the necessity of lay citizens' involvement. The workshop was not thought of initially as a research activity and so it was not recorded and there are no transcriptions of this debate.

Figure 4.7: Dissemination workshop – June 2012

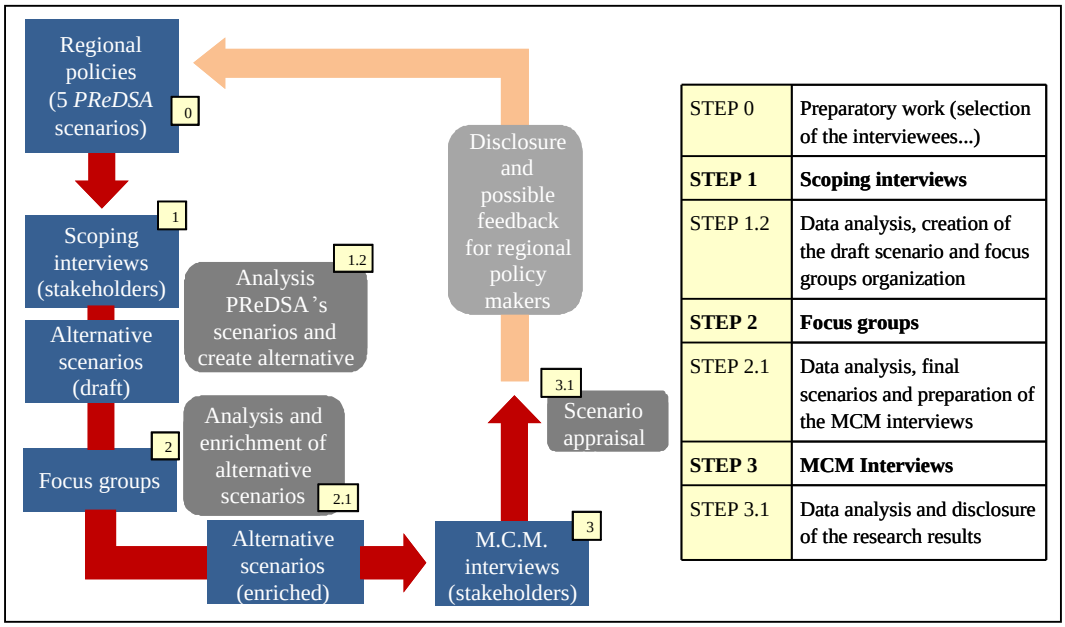


This workshop was incorporated into the research once the three core steps were designed and had been undertaken. It was organised to be a keystone of the project. The workshop was undertaken in June 2012, a year and a half after the core fieldwork. This time lapse can be seen as long, and participants could feel disengaged from the research, but particular care had been taken to use local communication means to keep the general public informed with press articles and the research blog. Therefore, during these 18 months, participants could have experienced a modification in their ideas and expectations (e.g. considering the effects of the recession which was just starting in 2009). The workshop was indeed the only opportunity where stakeholders, key informants and lay citizens could meet together and debate the issues at stake. It was thought as the DM's closure dissemination workshop. In DM this closure event was also aimed at gathering participants' comments to inform improvements of the process. The evaluation questions concerned participants' engagement, differences in the roles, improvements in the methodology and potential applicability of the methodology. In participative foresight scenario mapping some of these objectives were addressed with enquiries at the end of the focus groups and the MCM interviews (Appendix 2).

4.4 Summary

The participative foresight scenario mapping methodology sets out the conditions in which specialised stakeholders and lay citizens could, in a reflexive way, develop and appraise specific foresight scenarios for a small island's sustainable development. The institutional framework for the project was the proposed regional foresight scenarios (*PReDSA* sector-based scenarios); these were also used in the appraisal for substantive reasons as they added perspectives valuable to understanding the island's potential development. Figure 4.8 (adapted from Figure 1.2) presents an overview of the process and the different steps (in yellow in the figure).

Figure 4.8: Research overview



The first main stage of the project was dedicated to developing particular multi-disciplinary scenarios for Flores, later appraised jointly with the institutional scenarios, in multi-criteria mapping interviews with stakeholders. The process has the potential to inform local policy; this is why Figure 4.8 represents a continuous loop. In addition to the scenario-building exercise parallel activities were held to gather concrete information on potential projects for the island (Appendix 15), with the objective of informing the transition(s) that could be made in order to reach the desired future(s). Participative foresight scenario mapping methodology application is analysed in the next chapter with the aim of understanding how it answered the research questions.

Chapter 5: Critical reflection on participative foresight scenario mapping methodology

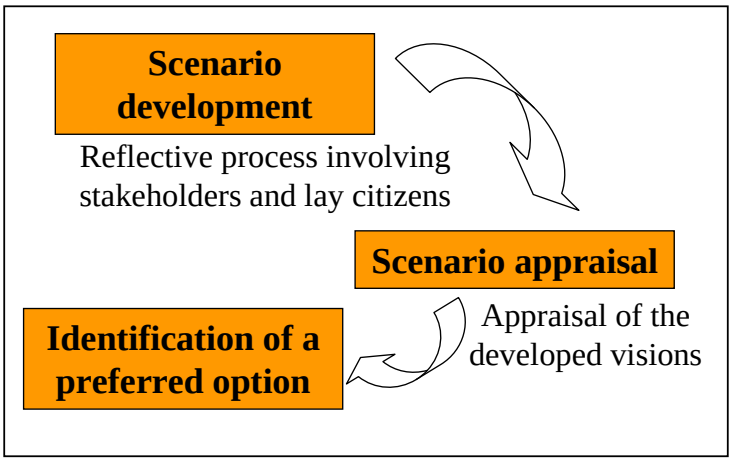
Seaside Goldenrod (Solidago sempervirens).

5 Critical reflection on participative foresight scenario mapping methodology

5.1 Introduction

The previous chapter has set out how an existing appraisal method has been adapted innovatively to create participative foresight scenario mapping methodology. The points analysed in the present chapter, the procedural aspects of the methodology, are as relevant as the findings on sustainable development they help to inform (Chapter 6) and they provide a framework for understanding these contributions. This chapter develops the critique of the procedure in the context of the literature on citizens' participation, scoping and multi-criteria interviews and criteria selection (Figure 5.1 summarizes the steps of the methodology). One of the ambitions has been to develop the MCM appraisal method into a more participative and iterative dimension; this was done by distributing the appraisal's internal phases into different categories of participants and through different steps (Figure 4.6). The present chapter is divided into three sections assessing the steps of the project; but first, the public participation process is analysed in order to answer to the research objective of designing a project aimed at incorporating a wide variety of perspectives.

Figure 5.1: Project summary

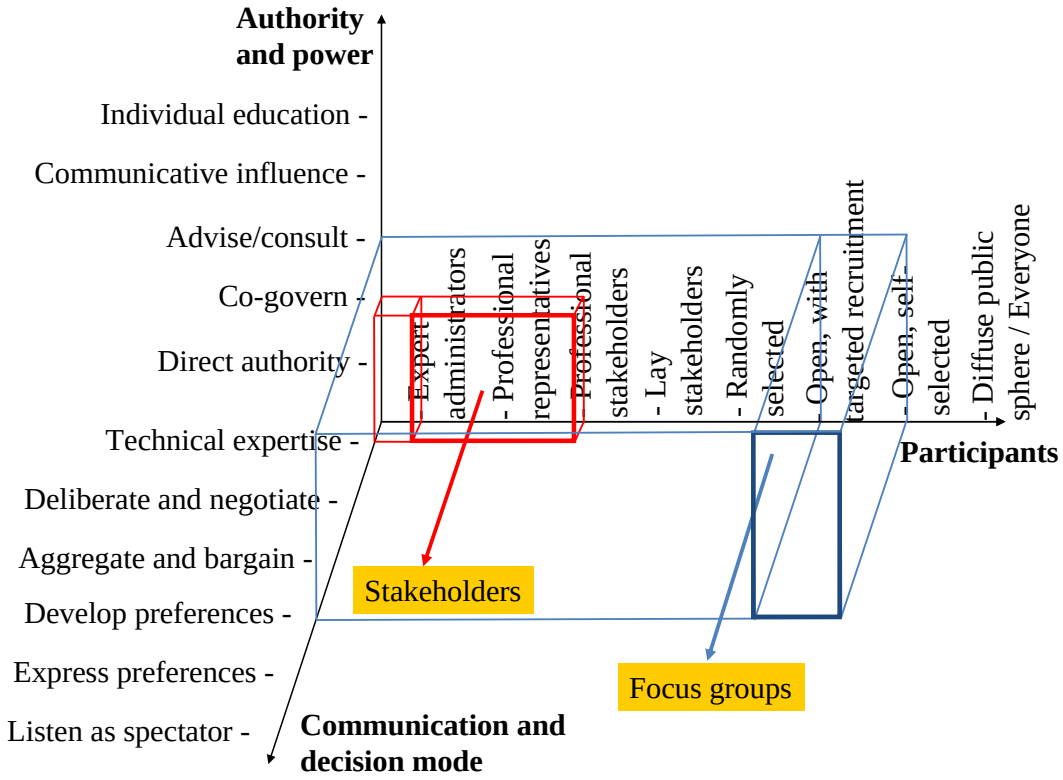


5.1.1 Public participation and the project

In order to understand the real and potential reach as a citizens' public participation process, it was important to analyse the project as if it was officially incorporated in a policy-making process. In this context the entire process can be associated with Arnstein's "Partnership" rung (conf. Chapter 2: Section 2.2.2.1): "power is in fact redistributed through negotiation between citizens and power holders. They agree to share planning and decision-making responsibilities through such structures as joint policy boards, planning committees and mechanisms for resolving impasses" (p.221). The foresight scenarios included contributions from decision-makers and non-decision-makers. In the multi-criteria appraisal process non-decision-makers' points of view were weighted the same as decision-makers', and criteria selection was mainly the lay citizens' responsibility (directly influencing the appraisal process). However lay citizens' role in the focus groups can also correspond to the "Consultation" rung as citizens' "concerns and ideas (are) taken into account" through scenario comments and later modifications and the selection of the appraisal criteria. Arnstein's uni-dimensional classification of participatory processes following the relations to power shows here its limitations: it only considers one aspect of participation (omitting other crucial criteria such as the learning process, the way in which participation is held or participant selection) and, as Arnstein's classification is unclear, it leaves space for interpretations and subjective judgements.

Fung's "democracy cube" (2006) (conf. Chapter 2: Section 2.2.2.1) completes the analysis of public participation in the present project. A distinction has been made between stakeholder involvement and the role of the focus groups in the process. The analysis of the focus groups refers to how lay citizens influenced the full process, while the analysis of the specialised stakeholders includes their participation in the scoping and the multi-criteria interviews. In the "democracy cube" the present project (focus groups and interviews with stakeholders) would be represented as in Figure 5.2. Participant selection, the "communication and decision modes" and "authority and power" dimensions of the project are now explained.

Figure 5.2: Participative foresight scenarios mapping methodology and the "democracy cube" (adapted from Fung, 2006)



In the project methodology a variety of participants were targeted. Five focus groups were "open, with targeted recruitment", as the participants were convened by their sector of activity (or age characteristics) (fishermen, farmers, young adults, tourism sector and industry/handicrafts); these were "natural focus groups" (Conradson, 2005, p.134) (conf. Chapter 4: Section 4.2.4.1). In addition to these targeted focus groups, two focus groups of local residents were convened following "open, self-selected" standards; this aimed at recruiting any locals interested in the research project in "assembled focus groups" (Conradson, 2005, p.135) (conf. Chapter 4: Section 4.2.4.1). The involved stakeholders comprised "professional stakeholders", "professional representatives" and "expert administrators". The varied stakeholders' group included local key informants (similar to Fung's "professional stakeholders"[46]) to regional civil servants (Fung's

[46] However Fung's differentiation between lay and specialised stakeholders is done on the basis of whether they were paid to participate in the process or not (see Table 2.1). Independent of this aspect we can consider that the interviewees in my research project are specialised in their field of activity.

"expert administrators"). The "professional representatives" were the two council representatives that participated in the project (conf. Table 4.4).

The "communication and decision modes" dimension appraises how participants engaged in the process. In focus groups, participants could debate and develop their points of view on the scenarios, and choose the criteria for later appraisal; this corresponds with Fung's "develop preferences" category. Stakeholders had a much more 'intense' role in the project as they had to provide "technical expertise" on the issues at stake; this was particularly true in the multi-criteria appraisal interviews. As stated above, stakeholders' level of expertise was relative: they could show proficiency in some areas but had lay knowledge in others; nevertheless they were involved in the process carrying out "technical expertise" tasks.

The "Authority and power dimensions" refer to public impact of the policy being discussed. In the scope of the project, focus group participants, by commenting on the scenarios and selecting the criteria, were providing "advice and consultation" and through this means their contributions could modify the scenarios (exercising direct power). As noted above, the scope of this analysis supposes that the final outcome is decisive in defining official strategies for development. Therefore stakeholder impact could have a "co-governing partnership" dimension, if, for instance, the scenarios were used to define policies or decide on how the budget should be allocated.

Although Fung's cube is a more complete tool to appraise participative processes than Arnstein's, there are aspects of the process that cannot be transposed within it. One is that it does not show how the different types of participants in the same project interact within it; therefore it is a limited tool to appraise iterative participatory processes where there is interaction between different groups of participants. In addition, different actions can overlap in the same process, for instance "individual education" can be common for all the participants even if they have a much higher level of involvement in the decision-making process, or the recruitment process can target different groups of participants simultaneously

(for instance the interviewees can be professional stakeholders or expert administrators). In the end, complex participative processes, instead of being represented by simple cubes, are represented by spindly multi-layered figures, which do not support the representation of the full complex participative processes very effectively.

5.2 Scoping interviews with stakeholders

5.2.1 Alternative scenarios for Flores Island's sustainable development

Face-to-face, individual semi-structured interviews with stakeholders aimed at providing an informed idea of how stakeholders saw Flores Island in 2030 (conf. Chapter 4: Section 4.2.3.2). When asked how they imagined the island in 20 years time the interviewees declared themselves to be optimists or pessimists on the future of the island and they mostly gave a 'realistic', rather than 'creative', vision for the island. Participants could have developed more 'futuristic' or 'fanciful' visions, but they based their perception of the future on a conventional vision. This might be due to a sense of continuity, or because the time horizon (20 years) is still close enough to prevent developing more imaginative visions. The contributions informing this low expectation of change are now presented. The regional rural tourism specialist[47] gave two explanations for this continuity: local emigration coupled with low ambition of the remaining population, and a cultural aversion to change:

> "*When I say almost unchanged social nets it is related with all these aspects, I mean, resistance to change* […] *the population that stays is the remaining of what was existed and left, the most competent leave. There is little capacity to understand the island's value and in consequence to innovate in profitable*

[47] In order to ease the reading stakeholders are only referred by their activity, the contributions from the focus groups' participants will be explicitly identified as coming from a focus group participant, and focus groups with only one participant will be identified as FGI.

> *fields. Tourism is not an innovative field. Innovative fields are related to… to industry.*"[48] (regional rural tourism specialist)
>
> "*It is a cultural matter; changes are related with culture. And islands with a small population are very conservative, exactly because of this. They* [locals] *do not trust change…*"[49] (regional rural tourism specialist)

The local manager of the entrepreneurship support service stated that development on the island is path dependent, so it is very likely that the existing situation will remain the same in essence even if there are changes to government or policies:

> "*I think that big changes... main structuring policies, these that affect a lot of fields, I think that they will not change. Investments have been made and it is impossible to change them.*"[50] (local entrepreneurship support services)

The museum curator also feared the negative effect of depopulation on the island's future development:

> "*I recognise that in these 20 years Flores has developed more than in the last 500 years, in these 20 years the development has been faster in Flores. But I am worried about the future, because first of all Flores is getting depopulated, nowadays we hardly are 4000 people.*"[51] (local museum curator)

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[48] "*Por isso quando digo um tecido social pouco alterado tem a ver com esses aspectos tudos, oseja, resistencia à mudança* [...] *a população que fica é sempre um bocado a sobra daquela que foi gerada e que saiu, os mais avançados saem. Pouca capacidade de perceber as mais valias da ilha e por tanto gerar redimentos em áreas inovadoras. E o turismo não é uma área inovadora. As áreas inovadoras seriam áreas de... mais a ver com a indústria.*" (regional rural tourism specialist [Daniel A.])

[49] "*É uma questão cultural, as mudanças tem a ver com cultura. E as ilhas muito baixamente povoadas são extremadamente conservadoras, exactamente por isso. São desconfiados em relação às mudanças...*" (regional rural tourism specialist [Daniel A.])

[50] "*Eu penso que é assim, as grandes mudanças... as grandes digamos as políticas estruturais, aquelas que vão mecher mesmo, e que mechem em muitas, muitas áreas, não, penso que não vão mudar. Há investimentos políticos que foram feitos que é impossível dar a voltar atrás.*" (local entrepreneurship support service [Maria O.])

[51] "*Eu conheço bem a ilha, sou natural de cá, nasci cá. Sai para estudar e regressei, estou a trabalhar nas Flores há cerca de 20 anos e reconheço que nestes 20 anos as Flores tiveram uma evolução superior a aquela que não teve nos 500 antes, em estes 20 anos houve uma aceleração grande do desenvolvimento das Flores. Agora vejo como alguma preocupação o futuro, porque em 1º lugar que as Flores estão a perder população cada vez mais, neste momento penso que difícilmente já chegarão às 4000 pessoas.*" (local museum curator [Tiago R.])

And later in the interview he stated the difficulty of innovating in Flores' industry, and therefore to change the prevailing socio-economic structures:

> "*Frankly, about industry I do not see actually great options for Flores. Maybe some new industry, some new products maybe related with the sea, scientific and technical developments can bring them, but now I see a lot of difficulties in industrial projects for Flores.*"[52] (local museum curator)

A similar perspective for industrial development was given by the manager of the entrepreneurship support association:

> "*About industry, I do not see great possibility for development. Handicraft is an area that will always be complementary. It will never be, for sure, an economic activity in expansion that will employ people.*"[53] (regional manager of local development association)

And the member of the association of the Friends of Flores forecasted a continuation of key sectors (agriculture, fishery, trade and industry):

> "*But I think that in the next 20 years it will not have a development as important as in the last 20, some things will happen, I hope and I think that they will be good, some others might not be.* […] *Stagnation of agriculture and fishery, as well as for trade and industry, I do not see a great evolution.*"[54] (Flores' friends association)

These conceptions of the future of the island and the explanations given by the research participants echo the concept of islands as places where change does not happen as fast as in other territories (Péron, 2004). In the case of *florentinos*'

[52] "*Eu sincéramente em termos industriais eu nesta altura não vejo grandes, grandes hipóteses para para as Flores. Eventualmente, algumas indústrias novas, algumos productos novos e eventualmente relacionados com o mar que possam surgir entre tanto, que os desenvolvimento científico e tecnológico nos tragam, neste momento eu vejo como muito dificil que venga qualquer projecto industrial nas Flores.*" (local museum curator [Tiago R.])

[53] "*A indústria não vejo grandes possibilidades de aparecerem grandes indústrias aqui. O artesanato é uma área em que será sempre complementar de uma actividade. Nunca será, certamente, uma actividade econômica de expansão e que realmente as pessoas se possam virar só para aí.*" (regional manager of local development association [Francisco T.])

[54] "*Mas acho que nos próximos 20 anos que não vai haver um desenvolvimento tão grande como o que aconteceu nos últimos 20, vão acontecer algumas coisas, espero eu e penso que algumas serão boas, outras poderão não ser.* [...] *Estagnação da agricultura e das pescas, e mesmo a nível de comércio e indústria, eu acho que não vai haver grande evolução.*" (Flores' friends association [Teresa V.])

relation to change it appears that it tends to be dominated by an aversion to change. In addition to this cultural barrier to change, it seems that the emigration of the younger stratum of the population accelerates ageing and it empties the island of younger and potentially more active individuals.

In addition to this sense of continuity two potential typologies of development emerged from these interviews (conf. Chapter 4: Section 4.2.3.2 and Figure 4.3): SDS and BDS. The draft scenarios as presented to the lay citizens in the focus groups are displayed in Table 5.1 (Appendix 8 and Appendix 4.2: Communication 2 for the versions in Portuguese as presented to the participants; Table 5.1 is an extended version of Table 4.6 for BDS and SDS scenarios).

Table 5.1: Draft scenarios built from scoping interviews to stakeholders and presented to lay citizens in the focus groups

	Scenario 1 – Standard development (SDS)	**Scenario 2 – Balanced development (BDS)**
Summary	Scenario of development through public investment in infrastructure, enabling a more intensive primary sector that will permit the export of some agricultural products (bovine meat, milk and milk derivative products) and a more standardised tourism model (capitalising on the island's opportunities but not specifying a minimum environmental impact). Increase in economic activity (public and private) and employment.	Scenario of development through high environmental quality standards and valuing local patrimony associated with nature and living on the island. Careful investments are fundamental, as well as infrastructure aimed at valuing the island, prioritising the local population but also thinking about tourism requirements. They would also specify a minimum environmental impact, as well as conservation, improving and valuing the ecosystem services and reduction of external dependence.
Long-term strategy	Cohesion with other islands through important investments but sacrificing part of the island's patrimony; quality of life increasing through important investments.	Island patrimony conservation (natural and cultural) through politics and activities that value them while increasing population well-being. This could slow down of some economic activities.
Key investments	*E.g.*: oriented to cohesion, transport, health, vocational training school oriented to production, 80% of renewable energies total produced locally.	*E.g.*: oriented to bring out and improve quality of life, waste management, vocational training school (preservation and sustainability), 100% of renewable energies produced locally and health.
Risk	"*Create a white elephant*" (infrastructure underused)	"*Create a green elephant*" (preserve natural heritage but depopulation).

Agriculture	Production of some products oriented to export (meat and milk), increase in intensity.	Local market oriented, import substitution, organic, varied.
Fishery	Intensive fishery, tendency to maximise resources.	Priority given to conservation and sustainability, alternative incomes to compensate fishermen.
Tourism	Popular tourism, high-volume venues, this could create pressure on the environment. The development model is similar to bigger islands.	Objective of high quality and low impact tourism, development would not be to the detriment of local population, who will benefit from tourism.
Transport	Important investments (roads, airport and port) to permit more tourism, population growth and exports.	Maintain current services and/or aim at minimum environmental impact.

BDS can be seen as a local answer to Jackson's (2009) "ecologically-literate macro-economics" (p.123). Jackson presented only the foundations of this new macro-economy, which can be understood more as an (eco)evolution than a revolution of basic macro-economics. Such a sustainable economy denies the principles of the need for constant growth in consumption and prioritises ecological investment (undertaken in a hypothetical *Green New Deal*), meaning that efficient use of resources is prioritised, substitution of polluting conventional technologies is undertaken and ecosystems are improved (Jackson, 2009, p.139). The *Green New Deal* is proposed as a way to re-start the economy with public investments aimed at increasing "energy security, low carbon infrastructures and ecological protection" (Jackson, 2009, p.107). The public sector is expected to gain weight in this new economic landscape: Jackson considers that the public sector is more aware of the importance of sustaining "social assets" (p.140). But BDS implies that all economic "actors" must be aware of the transition to a sustainable economy, or, to use Jackson's words: all the economic actors must be "ecologically-literate" (p.123): the public sector and lay citizens must have in mind ecological principles and behave appropriately, otherwise individual behaviours can counterbalance public initiatives, cancelling or diminishing their positive impact. BDS can be seen as a local interpretation of Huang *et al*'s (2008) eco-island concept as it is based in some of its central characteristics: sustainable use of natural resources, comfortable human habitats, prosperous and stable eco-economy, widespread ecological awareness (Huang *et al*, 2008, p.587; conf. Chapter 2: Section 2.3.1.1). In that sense BDS represents a clear rupture in

relation to SDS; nonetheless, it remains an evolution of the actual situation rather than a revolutionary scenario: the essential elements to implement BDS's vision exist (e.g. technology, natural heritage and the international acknowledgement of the island's environmental value); reaching it is just a matter of changing attitudes and behaviours.

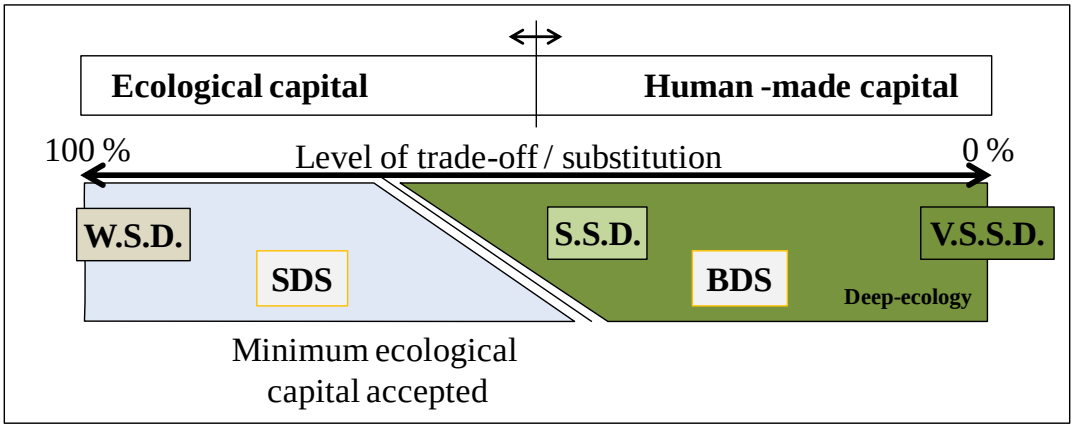
5.2.1.1 The epistemological framing of Balanced and Standard development scenarios

The objective of identifying Standard and Balanced development scenarios was not to present an economic model or a detailed set of statistical data, but to present the island's possible development pathways and potential foresight scenarios in a narrative and accessible way. Working with this typology of narrative scenarios allowed the discussion of preferences and issues that otherwise could have seemed too complex or too technical to be analysed by lay citizens and stakeholders who did not have proficiency in all the issues concerning sustainability.

In spite of their apparent simplicity, the draft scenarios had to be considered realistic for the island, and their principles had to be 'traceable' in pre-existing theoretical constructs in order to compare them with existing research and models. As the research aimed at developing foresight scenarios for Flores' sustainable development, the two scenarios had to be classifiable in the different typologies of sustainable development. As developed in Chapter 2 (Section 2.2.1.1), weak sustainable development advocates trade-offs and substitution between economic activity and natural heritage; authorising natural capital degradation for the creation of human-made capital. Considering natural capital as essential for human activity, strong sustainable development does not contemplate the possibility of a complete substitution. In the best case, SDS reflects sustainability goals in line with weak sustainable development principles whereas BDS could be associated with, or tends towards, strong sustainable development goals. Figure 5.3 illustrates the SDS and BDS's position in a range of possibilities between weak and very strong sustainable development, which present ambiguous differences. As well, from the scale point of view, SDS can be related to an "*anthropocentric optimum"* while BDS tends towards a "*biocentric optimum"*

(Daly, 1991, p.259). Daly defines scale as "the physical scale or size of the human presence in the ecosystem, as measured by population times per capita resource use" (p.259). *Anthropocentric optimum* can reach a higher scale than *biocentric optimum* as the former does not assign any 'intrinsic value' to non-instrumental species and habitats. As previously mentioned in Chapter 2, scale issues are especially relevant on small islands.

Figure 5.3: Weak and strong sustainable development (W.S.D.: weak sustainable development; S.S.D.: strong sustainable development and V.S.S.D.: very strong sustainable development) (author's elaboration)



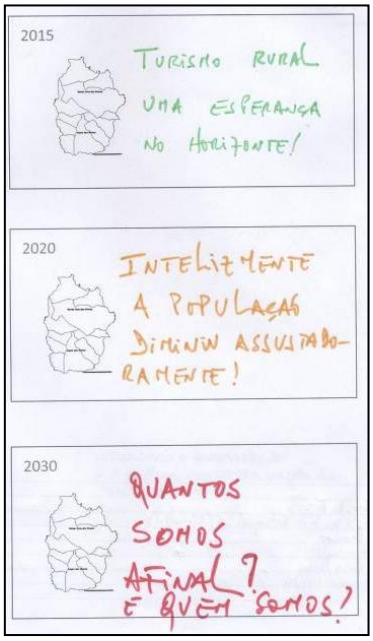
Therefore, while the participants in the focus groups and the interviewees were commenting on their preferences for BDS or SDS they were analysing their preferences between weak and strong sustainable development at the same time. Reflecting on the viability of these models of development is crucial as they can become the ideological foundations of island development. Moreover, if points of view converge towards either of the scenarios it can mean that a possible consensus can be reached on which type of development to follow.

5.2.1.2 Presentation of risks associated with each scenario to stimulate critical analysis

To foster critical analysis the SDS and BDS also propose visions of what could happen if these development strategies were not successfully implemented. In the scoping interviews the guest house manager and historian commented on the risk of having an empty island with a "*lighthouse keeper and groups of tourists that*

visit it"[55]. The local restaurant manager also stated the risk of depopulation (as can be seen in his note sheet, Figure 5.4; the use of note sheets is analysed in the following section). The image of the '*green elephant*' (a metaphor adapted from the commonly used '*white elephant*') was used to illustrate the risk of extreme depopulation due to the constraints of over-preservation of natural heritage in the BDS: Flores would be a model of conservation but it would be empty of people. The '*white elephant*' metaphor illustrates SDS's threats, consisting of the implementation of under-used, disproportionate, human-made infrastructure.

Figure 5.4: Risk of depopulation on Flores Island and potential loss of identity in the long term (restaurant manager, scoping interviews)



"*2015: Rural tourism, a hope in the horizon!*

2020: Sadly population frighteningly decreases!

2030: How many are we? And who are we?"

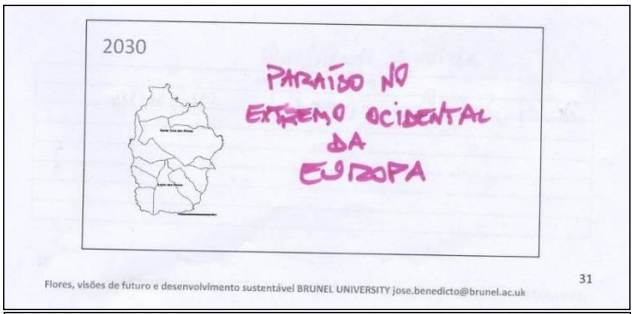
5.2.2 The use of note sheets in the scoping interviews

As presented in Chapter 4, Section 4.2.3.3, note sheets were used to support the individual interviews and help identify the most relevant elements to envision desired futures. The interviewees used this communication means in different ways. Some interviewees did not feel confident with it; while others did not hesitate to freely explore the possibilities offered by this alternative means of expression (conf. Appendix 3 where all the note sheets are presented). The note sheet was used from the beginning of the interview and some of the stakeholders

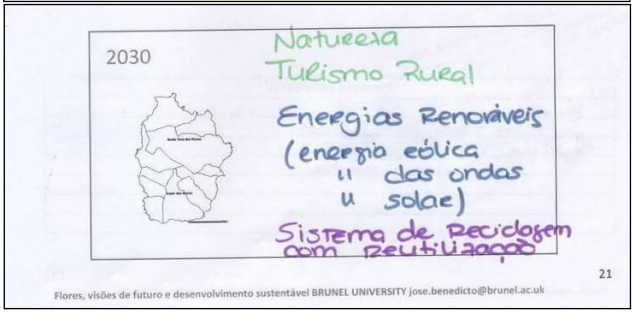
[55] "*A ilha com faroleiro e grupos que a visitam*" (local guest house manager [Luca J.])

used it throughout the entire interview, adding new inputs during the course of it. Even if the supporting note sheet had only a complementary function, it allowed some of them (the regional environmental association representative, the University professor and the guest house manager) to back up their reflections: to summarise, give a hierarchy to their ideas and schematise them. But the success of the experience with the note sheet was relative as most of the interviewees completed only the third box (relative to year 2030) where they proposed a key word, a slogan or a sentence that could summarise their vision. Yet this 'experiment' was useful in the sense that it provided extra outcomes for focus groups and disclosure material (such as communication documents and the informative research blog: http://flores-visoesdefuturo.blogspot.com/), in addition to being a potential means to express and develop the interviewees' ideas. As a compilation of the most relevant points of view, the note sheet data provided a good glimpse of the stakeholders' main concerns. This material shows that some themes were recurrent: nature (nature conservation), tourism (ecotourism, rural and nature tourism), demographic issues, renewable energies, quality of life, agriculture, waste management, transport, relationship with the ocean, and sustainability in general (conf. Box 3.1 in Appendix 3). Figure 5.5 shows how two interviewees used the note sheet: one to write a slogan on his general vision for the island, and the other to write a list of potential strategies for the island.

Figure 5.5: Example of supporting note sheets (respectively, a local representative and a member of the local entrepreneurs' support office)



"2030: Heaven in the European westerly point"



"2030: Nature. Rural tourism / Renewable energies (wind power, wave power, solar energy) / Recycling with reutilization"

5.3 Focus groups

5.3.1 Lay citizens' participation and the project

Public participation is related to the existence of strong social capital in a community (Putnam, 1993a, 1993b and 2000), it is expected that concerned individuals get involved and cooperate, in meetings or actions, to help solve any deficiencies they identify in their region. Therefore, the stronger social capital is, the more popular and effective these participatory projects should be. Chapter 6 (Section 6.2.3) informs in depth the perception research participants had on matters related to social capital: insights on the quality of the social networks, local participation in the socio-politic life and the need to foster effective local decision-making based on cooperation and mutual trust. The 30 participants in the focus groups represent almost one per cent of the island's population. However, the assessment of social capital through participation in the focus groups is not that straightforward. This is in part because participants in such projects are not necessarily representative of their communities (as pointed out in the following paragraphs).

The need to appraise participatory processes has been pointed by Blackstock *et al* (2007) and Michels and De Graaf (2010). Three functions have been identified for participation: the "educative", the legitimisation of decisions by participants' acceptance and the "integrative" (Michels and De Graaf, 2010, p.480). The educative dimension involves the learning process, legitimisation refers to the acceptance of the outcomes, and the integrative function is the capacity that participation has to increase the feeling of belonging to a community. Participatory projects may seek some of these objectives but their degree of performance might vary. The three functions proposed by Michels and De Graaf are now appraised.

In the present project enquiries were made at the end of each focus group to evaluate the impact of these group discussions among participants (the enquiry is presented in Appendix 2). All 22 respondents to the enquiry (eight participants did

not answer) agreed that they had learnt something about Flores' development alternatives; indicating that the project succeeded in the learning/educative function. Yet only six of them declared that their opinion on the island had changed (two interviewees explained that they had already formed an opinion on the island and its potential for development). The *nuance* between 'learning' and 'opinion changes' suggests that the process did not necessarily influence the participants' perspectives, but at least it informed them. Influencing would be a higher level, changing the individuals' point of view, whereas informing relates to increasing the level of knowledge or understanding.

The participants in the focus groups were also asked in an open-ended question in the enquiry which of the themes (or projects) commented on during the meeting they considered more relevant. Most of the themes pointed to in the enquiry related to BDS characteristics, for instance: rural tourism, population involved with the need to preserve the natural heritage, sustainable development (with no specification), self-sufficiency and the need to prevent mass tourism. Fishery, farming and transport were also mentioned but without further explanation. The special consideration of the BDS's attributes suggests a high level of awareness for this type of development.

Participants unanimously agreed on the usefulness of the scenarios to reflect on the island's future. The main opinions here were that this process allowed the production of new ideas: "*while debating on the scenarios new ideas are produced*"[56] (young adults – focus group). Or that the scenarios were an opportunity of reflecting on possible adaptations of the projects: "*without any doubts, once the projects are visualised in a theoretical way, changes and adaptations are possible*"[57] (young adults – focus group). Or, more simply stated, they "*were the opportunity of having a vision for the long-term*"[58] (Lajes das Flores - focus group). The assessment of possible scenarios by lay citizens was

[56] "*Porque ao debater esses cenários surgem novas ideias*" Young adult - Focus group
[57] "*Sem qualquer dúvida uma vez que visualiza-se de forma teórica os projectos, podendo-se fazer alteracoes e adaptacoes*" Young adult - Focus group
[58] "*Permite ter uma visao a longo prazo*" Lajes das Flores - Focus group

also an opportunity to "*make them less Utopian and more feasible*"[59] (tourism – focus group) and it "*means an intended and planned development, avoiding unfunded decisions*"[60] (Lajes das Flores - focus group). These last points imply that lay citizens' roles could help to incorporate realism into the visions, bringing locally informed perspectives to the scenarios. Another respondent identified that using scenarios "*eased decision-making on what is the best for the island*"[61] (young adults – focus group), or that it "*eased to frame correctly a positive development*"[62] (Lajes das Flores - focus group). The respondents to the enquiry legitimised the use of the scenarios in the process and the scenarios themselves; they acknowledged the capacity the method has to support realistic decision-making and to inform long-term development.

The integrative function of participative processes is defined by Michels and De Graaf as the "participation [which] contributes to citizens' feeling of being (are) public citizens, part of their community. As a consequence, they may also feel more responsible personally for public decisions" (2010, p.480). Monitoring the integrative function of the process was not an aim of the research and it was harder to assess. However, 21 participants (almost the totality of them) affirmed that they could take part in other projects involving public participation, indicating that they understood the benefits of these participative processes and their willingness to contribute their own points of view to policy-making processes.

As has been demonstrated, respondents could learn from the process (establishing its educative function) and focus group members showed their availability to participate in similar future projects, pointing to its integrative potential and its capacity to foster participation in future projects. As well, using scenarios was found to be an opportunity for lay citizens to appraise and legitimise the alternatives proposed to them. But the focus groups were not believed to be an opportunity to modify participants' strongly-held views or their understanding of

[59] "*Sim, porque através da proposta de cenários para o futuro da ilha e da sua análise é possível discutir e torná-los menos utópicos e mais realizáveis*" Tourism - Focus group
[60] "*Porque implica um desenvolvimento pensado e programado, evitando decisoes malfundamentadas*" Lajes das Flores – Focus group
[61] "*Desta forma é mais facil decider o que é melhor para a ilha*" Young adult - Focus group
[62] "*De modo a poder-se fazer um desenvolvimento positivo bem emquadrado*" Lajes das Flores – Focus group

the role of decision-makers in its development. For instance, only five participants agreed that their opinion on how the government should promote socio-economic activity on the island had changed. This fact might be explained by participants having an already strong opinion about the island. Goss and Leinbach (1996) also observed that while a majority of participants to the focus groups learned something new only a minority "found it to be a transformative experience" (p.121).

Moreover, some participants in the focus groups were involved (or had been involved) in public roles such as parish representative, political parties or farmers' associations, or they were council civil servants. This also explains their availability to participate in existing and further community projects and their already established opinion on the island's potential. It is relevant to question the representativeness of the focus groups. The recruitment methods used for the focus groups were open, self-selected or targeted (conf. Section 5.1.1 on Fung's democracy cube). As Fung pointed out, self-selected participants are not always representative of their community as they are usually more informed individuals; additionally, even if the recruitment is targeted, only aware and concerned individuals tend to accept and to attend focus groups.

5.3.2 Lay citizens and the appraisal of the standard and balanced development scenarios

To avoid influencing the participants, the SDS and BDS were presented to them as Scenario 1 (SDS) and Scenario 2 (BDS). Overall, lay citizens agreed more on BDS's general proposal. Comments on this scenario indicate that this vision was preferred for the island (fishermen and Lajes das Flores' focus groups) and they agreed overall with the scenario (farmers, tourism, young adults' focus groups and Santa Cruz das Flores FGI). But some aspects of the SDS were sometimes preferred; these were the increase of (cattle) farming production (Lajes das Flores) and the transport model (Lajes das Flores and farmers' focus groups). The farmers themselves disagreed with the SDS's proposal for agriculture as they considered that intensive farming was too aggressive for the environment. Two focus groups

(Santa Cruz FGI and farmers) also pointed out that public investment, a keystone in the SDS, was essential for the island. Insights from focus group interviews are developed in the next section along with the contributions brought by stakeholders in the MCM interviews; Table 5.2 gathers together all the reactions to the BDS in the seven focus groups.

Table 5.2: Focus groups' reactions to the BDS

Craftswoman (FGI): "*I want to say that I like this* [BDS] *scenario.*"[63] Santa Cruz das Flores (FGI): "*I think that it corresponds to a more sustainable development. And it makes more sense, isn't? So… actually the island is very different to what it was in the past, isn't? There has been a lot of human intervention,* […] *as it is described here* [BDS]*… it makes the island more natural and nowadays this is what it is valued.*"[64] Lajes das Flores: " Caterina *Between these two scenarios I clearly prefer the second* [BDS]*. The one that is more sustainable.* Jaime *The second* [BDS] *with one or two characteristics from the first* [SDS]. Sónia and Caterina *Yes.* Jaime *I think, I think that first of all, development has been very slow, but I think that we are going towards the second* [BDS]."[65] Young adults: "*I agree with everything.*"[66] Tourism: "*I agree with scenario two* [BDS]."[67] Farmers: "*Scenario 2* [BDS] *is much better than scenario 1* [SDS]. *In everything: the investments, the risks, the strategy...*"[68]

[63] "*E também dizer que este cenário gosto bastante.*" [craftswoman - FGI]

[64] "*Acho que corresponde com aquilo que seria um desenvolvimento mais sustentável. E que faz mais sentido, não é? Embora... a ilha hoje já não é nada do que foi no passado, não é? Já houve, já houve muita intervenção humana,* [...] *mas de uma maneira como está descrita aqui... deixa a ilha mais natural e hoje em dia é o que mais se valoriza.*" [Santa Cruz das Flores - FGI]

[65] "Caterina
EU, destes 2 cenários eu preferi claramente o segundo. Aquele que é mais sustentável.
Jaime
O 2 com uma ou outra coisa do 1.
Sónia and Caterina
Sim.
Jaime
Eu acho, eu acho que acima de tudo, isto tem crescido muito devagar, está a crescer lentamente, mas eu acho que está bem encaminhado para o 2." [Lajes das Flores - focus group]

[66] "*Concordo com tudo.*" [young adults - focus group]

[67] "*Eu concordo com o cenário 2* [DEQ]." [tourism - focus group]

[68] "*Aqui o Cenário 2 é bem melhor que o Cenário 1. Em todo: nos investimentos, nos perigos, na estratégia...*" [farmers - focus group]

Fishermen:
Pedro "*Any of them is good for the island.*"
Paulo "*I do not have any critique to any of them* [SDS and BDS]."[69]

5.4 Multi-criteria appraisal interviews

The multi-criteria appraisal interviews with stakeholders took place in November and December 2009, this section presents and comments on the multi-criteria mapping (MCM) interviews and how they provided the opportunity to gather information on the preferences for the island's sustainable development while appraising the different scenarios quantitatively and qualitatively; Chapter 4: Section 4.2.5 presented its novel methodological characteristics. These face-to-face, computer-based interviews were executed following Stirling and Champion's recommendations and software, MCM Analysis (Stirling and Champion, 2009a).

5.4.1 MCM appraisal and uncertainty

As explained in Chapter 4: Section 4.2.5.3, the MCM process was spread throughout the different steps of the research project. MCM interviewees began by commenting on the seven scenarios (with emphasis on SDS and BDS). Some of the interviewees had already commented in the scoping interviews on the inapplicability of *PReDSA*'s scenarios when they declared that the future of the island was likely to be a mix of these scenarios rather than only one of these sector-based scenarios. Therefore, *PReDSA* scenarios were ruled out as realistic scenarios. However, discussion on then could help to enrich Flores' futures analysis adding breadth to the appraisal exercise. This is why the option of deciding 'principles' (criteria that had necessarily to be met by the scenarios) was not proposed, as this could have led to explicitly eliminating scenarios[70]. Conventional MCM interviews are an opportunity to gather qualitative and

[69] "Pedro
Qualquer um é bom para a ilha."
"Paulo
Nao acho mal nem um nem outro." [fishermen's - focus group]

[70] Using 'principles' was in fact tested in the first interview, carried out with the local library representative [Maribel I.], but it did not give extra insight on the scenarios and it led to some confusion. As the interview was held in different conditions to the others, to prevent bias, and to be consistent in the data format, quantitative data from this interview was not used in the analysis. Finally 18 interviews were taken into consideration in the quantitative analysis.

quantitative information on the scenarios appraised; this information is now discussed.

In the qualitative appraisal the BDS was preferred overall to the SDS. The *ecology centre* member referred to this scenario as the "*most positive*"[71], the island's environmental services member considered it "*intelligent*"[72], the regional entrepreneurship association manager and the local museum curator all labelled it as the "*ideal*" scenario; the local restaurant manager thought that the scenario was "*More adequate* […] *considering the size of the island and the existing conditioning factors*"[73]. As the local freelance economist observed: "*It corresponds to the idealised scenario for Flores Island*"[74]. Interviewees observed that the BDS addressed some deficiencies identified in the SDS, as the regional entrepreneurship support service manager opined:

> "[BDS] *files down some of standard development problems, some of its ridges.*"[75] (regional entrepreneurship support service)

The ecology centre team stated that the BDS was the best scenario: "*I think that this scenario is the most positive for the island in 2030*"[76], but finally gave better scores to another scenario (*Ecotopia*). This can be interpreted as evidence of the level of environmental awareness and preferences the ecology centre team has; the fact that *Ecotopia* finally scored better than BDS shows that these interviewees were clearly defending development pathways that prioritise natural heritage preservation. The freelance economist also stated her preference for BDS as it represents an idealisation of the island[77] but finally gave better overall scores to *Ecotopia*.

[71] "*Mais positivo*" (local ecology centre team [Jéssica L.])
[72] "*O DEQ. Isto é que tem inteligência.*" (local member of nature conservation service [Alberto Q.])
[73] "*O mais adequado.* […] *Atendendo à dimensão da ilha e os condicionantes que nós já temos*" (local restaurant manager [João-A. K.])
[74] "*Responde ao cenário que eu idealizava para a Ilha das Flores*" (local freelance consultant [Isabel S.])
[75] "*Acaba por limar alguns dos problemas, algumas das arestas do cenário de DES*" (regional entrepreneurship support service [João B.]
[76] "*Eu acho que este cenário é o mais positivo para a ilha para 2030.*" (local ecology centre team [Jéssica L.])
[77] "*Responde ao cenário que eu idealizava para a Ilha das Flores*" (local freelance consultant [Isabel S.]) footnote 235.

The quantitative appraisal with MCM method requires the interviewee to give a minimum and a maximum score to scenarios following different criteria. Previous projects using MCM faced the challenge of understanding the logic behind each participant's scores and which were the factors that might have biased or conditioned the scoring. This is crucial, as scoring (the difference between maximum and minimum score) is here used to reflect uncertainty. In the PorGrow project (conf. Chapter 4: Section 4.2.5.2) researchers found that these differences between maximum and minimum scores can mean differences between good or bad "implementation", "appropriate or inappropriate applications" and the effect of "contextual variabilities" (Stirling *et al*, 2007, p.25). Other projects identified "strategic behaviour" (Burgess *et al*, 2007, p.316) or "strategic scoring" (McDowall and Eames, 2006), which occurs when an interviewee wants to favour or object to a specific scenario. This can be the case when an interviewee 'artificially' increases a scenario score in order to benefit her/his preferred vision, or the other way around. This behaviour is easily detected when the interviewee clearly states it. For instance, the museum curator's comments while scoring farming criterion are especially striking as the interviewee was simultaneously 'punishing' one scenario and 'rewarding' the other:

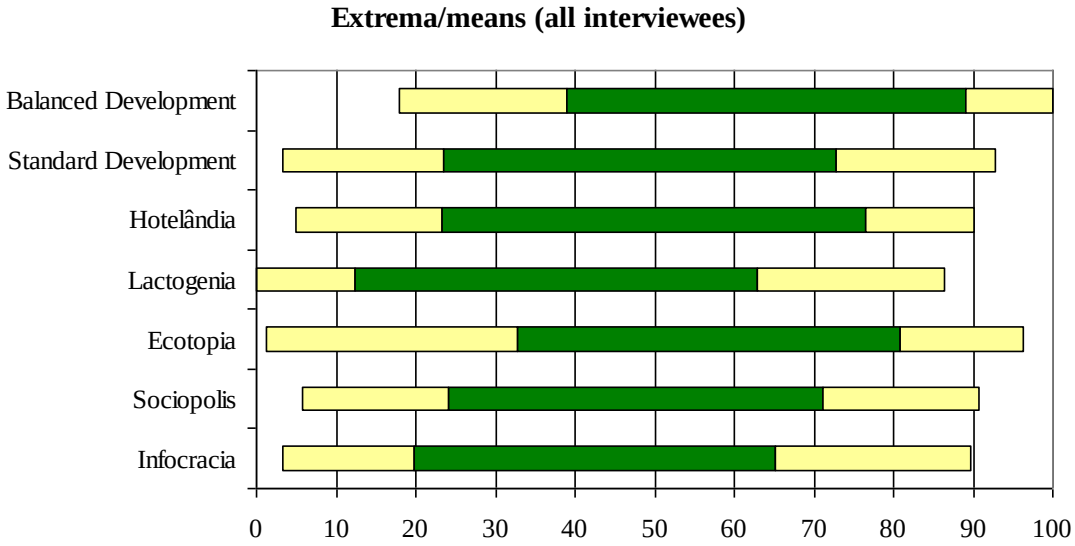
> "*Maybe here in... SDS... also... I have to reward BDS, it is my favourite... so maybe here* [SDS] *between 2 and 6. Minimum 2 and maximum 6. BDS, of course, it is my favourite; maybe I maintain 2 and I would give 10 in maximum.*"[78] (local museum curator)

The interviewees used the quantitative appraisal in a thoughtful manner and by this means they were effectively providing information on their preferences and their expectations for each scenario. It was clearly observable that they specially focused their reflection on the holistic scenarios made for the purpose of the study. But one key characteristic of the quantitative appraisal was the elevated uncertainty associated with all the scenarios; this point is developed in depth in the following section.

[78] "*Se calhar aqui no... DES.. também.. tenho que premiar o de baixo, que é o meu preferido.. por tanto se calhar aqui entre.. entre 2 e 6. 2 mínima, 6 máxima. DEQ, claro que este é o meu preferido, se calhar mantinha o 2 e dava aqui o 10 aqui no máximo*." (local museum curator [Tiago R.])

A final individual graph combines the scores given for the scenarios (Appendix 5.1); in the analysis stage these individual appraisals are combined to produce an overall graph (Figure 5.6). The overall graph, merging the data from 18 MCM interviews, represents both the mean, in green, and the *extrema* weighted scores (maximum and minimum scores given to a scenario by any individual), in yellow, for each scenario. Figure 5.6 should be the opportunity to observe if any scenario outshines the rest, considering both maximum and minimum average scores; giving an idea of the total range the scenarios got, but it transmits the same idea of scenarios' overlapping as the individual graphs (Appendix 5.1). These findings are now analysed.

Figure 5.6: Extreme (yellow) and average (green) weighted scoring for all participants[79]. X-axis indicates low to high performance.

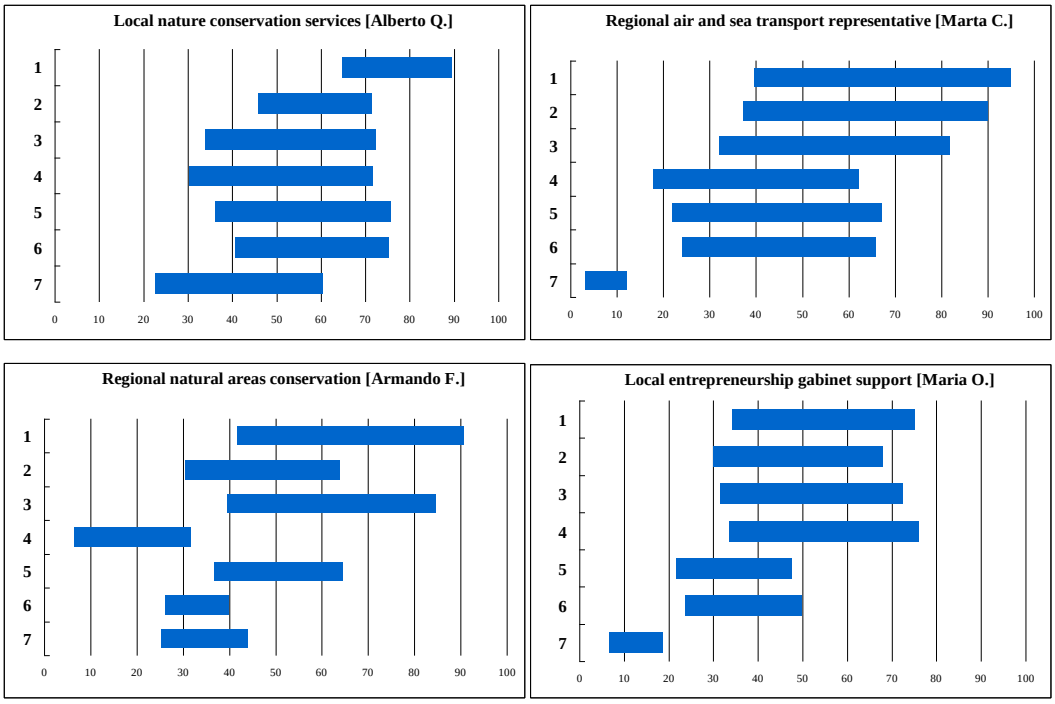


As introduced above, one of the direct outcomes from the MCM interviews with stakeholders was the individual graphs (also referred as *maps*) produced using the MCM Analysis software. Clearly contrasted scoring could have helped to identify the definitive best and worst options, but this proved to be the exception as there was, in general, a high level of uncertainty associated with the scoring. Indeed, only in four MCM appraisal interviews (with the local entrepreneurship support service, the regional manager of air and sea transport, and the regional and local

[79] All the graphs presenting the extrema and mean scores follow similar codes of colours (darker colours for the means and lighter colours for the extrema).

natural areas conservation service managers) does one scenario clearly stand out. For instance, one case where a scenario is undoubtedly identified as better is the local environment service member's appraisal; in his graph (Figure 5.7) we can see that the BDS scores notably higher than any of the other scenarios and has a lower associated uncertainty. Other illustrative cases where scenarios are clearly considered to be worse are the *Infocracia* scenario for the regional air and sea transport secretary manager and for the local entrepreneurship support service representative, and the *Lactogenia* for the regional natural areas conservation manager.

Figure 5.7: Examples of MCM individual *maps* where scenarios are clearly differentiated by their scores



1: Balanced Development; **2**: Standard Development; **3**: *Hotelândia*; **4**: *Lactogenia*; **5**: *Ecotopia*; **6**: *Sociopolis*; **7**: *Infocracia*

Independent of the uncertainty (length of the bars), if attention is focused on which scenario gets the highest maximum score, BDS scores better 13 times[80].

[80] Regional rural tourism specialist [Daniel A.], regional entrepreneurship support service [João B.], regional manager of air and sea transport [Marta C.], regional manager of nature conservation association [Jaime D.], regional manager of natural areas conservation service [Armando F.], local guest house manager [Luca J.], local restaurant manager [João-Alberto K.], local member of nature conservation services [Albero Q.], local museum curator [Tiago R.], local manager of agriculture

And the BDS gets the highest minimum scores from 12 interviewees[81]; which means that it is the scenario potentially less harmful for the island, or that it is the scenario with the least associated risk. It is also relevant to state that for 10 interviewees[82], the BDS had the highest maximum and minimum scores. This means that 56% of the interviewees were, overall, more positive about the BDS. As we can see, the individual graphs provide detailed information on how each participant scored the different options, but referring only to individual quantitative data would be very limiting, which is why the combination of the quantitative data and perspective groupings provide additional insights to the appraisal (conf. Section 5.4.2). The analysis of the uncertainty is now undertaken in order to understand its origins and how it influenced the assessment of the scenarios.

5.4.1.1 Analysis of the uncertainty in the appraisal

Uncertainty was a key factor in the scoring as it prevented any one scenario from standing out. One of the expected results was that the associated uncertainty of the scenarios developed for the island (BDS and SDS) was going to be lower than the regional *PReDSA*'s. BDS and SDS's higher accuracy, the fact that they were developed thinking exclusively about the island and their holistic vision (in opposition to the sector-oriented institutional scenarios) should have been associated with a lower uncertainty in the appraisal. Appendix 5.4, which displays the uncertainty in relation to the score and by issue (group of criteria), demonstrates that BDS effectively has a lower related uncertainty than the rest of

services [Sérgio X.] and local manager of infrastructure and transport services [Artur Y.]. [Out of 18 interviewees. The local library manager's data were not considered due to methodological differences in the appraisal]

[81] Regional rural tourism specialist [Daniel A.], regional entrepreneurship support service [João B.], regional manager of air and sea transport [Marta C.], regional manager of nature conservation association [Jaime D.], regional manager of natural areas conservation service [Armando F.], local restaurant manager [João-Alberto K.], local entrepreneurship support service [Maria O.], local member of nature conservation services [Alberto Q.], local museum curator [Tiago R.], regional manager of local development association [Francisco T.], Council representative [António N.] and local manager of infrastructure and transport services [Artur Y.].

[82] Regional rural tourism specialist [Daniel A.], regional entrepreneurship support service [João B.], regional manager of air and sea transports [Marta C.], regional manager of nature conservation association [Jaime D.], regional manager of natural areas conservation service [Armando F.], local restaurant manager [João-Alberto K.], local member of nature conservation services [Alberto Q.], local museum curator [Tiago R.], regional manager of local development association [Francisco T.] and local manager of infrastructure and transport services [Artur Y.].

the scenarios, but SDS has more uncertainty associated with it than the *Ecotopia*, *Sociopolis* and *Infocracia* scenarios.

The maps presented in Appendix 5.4 show also that the *Ecotopia* scenario was the second scenario with the lowest associated uncertainty (not surprisingly with the lowest uncertainty for the environmental criteria). On the other hand *Lactogenia* was the scenario with the highest associated uncertainty in all the issues (Appendix 5.4). This was linked to the high risk associated with the scenario and the fact that growth of cattle farming activity is limited but also potentially harmful to the environment (local guest house manager). The regional member of the nature conservation service considered that the end of external economic support and the difficulties of exporting made *Lactogenia* a non-viable scenario for Flores:

> "*I do not forecast a huge development in quantities, the price of the meat is getting lower, and due to the size of the territory we cannot compete against Argentina, number one of the competitors… in the national market it could have some future… it has already some market share in the Azores but I do not see… but there is a conflict between pastures and nature conservation. If we want to grow* [increase cattle farming production] *just a little bit, we will have to destroy the last small protected areas, this is why Lactogenia is totally unsustainable.*"[83] (local guest house manager)
>
> "*In relation with Lactogenia I think that it will not be the best path, no. To direct towards one of these fields… knowing that subsidies will end. Knowing the problems with exportation… and all the rest… if cattle farming is the keystone…* [of the economy] *only this, it does not make any sense. It will not make*

[83] "*Por isso que em termos de volume não vejo um grande desenvolvimento, os preços da carne tem tido a baixar, em termos de território, não podemos competir com outros mercados produtores como Argentina, número um dos concorrentes... a nível nacional poderá ter situação... já tem um bocadinho os Açores mas não vejo isto como... para já depois tem um conflito pastagem-conservação natureza. Por tanto se queremos crescer um bocadinho, vamos ter que dar cabo das últimas pequenas zonas protegidas que temos, por isso é completamente insustentável a Lactogenia*." (local guest house manager [Luca J.])

any sense."[84] (regional manager of natural areas conservation service)

Lactogenia was also associated with low employment creation; the comments and the wide range of scores given by the manager of the regional services of entrepreneurship support and the restaurant manager are representative of the uncertainty about employment creation in the *Lactogenia* scenario:

"*Here* [*Lactogenia*] *no, here no. We have already experienced this. We are talking about an investment, in a sector that does not create employment. We are talking… it creates but not so much. So here, in the worst case we are talking about 1* [min. score]*, few people producing, but it also requires some people, in the best case 6* [max. score]."[85] (regional entrepreneurship support service)

"*I think that… agriculture requires less and less people. I do not think that it* [*Lactogenia*] *will create employment. I will score it from 2 to 7.*"[86] (local restaurant manager)

But *Lactogenia* had also associated uncertainty and low scores for cultural criteria. The reaction of the freelance economist and the comments made by the manager of the local agriculture service are characteristic of the low expectations and high uncertainty for cultural matters:

"*Lactogenia… 0* [min. score] [laughs], *10* [max. score out of 20], *in the best case, because it has some interest...* [interruption]

Researcher

Ethnographic?

Interviewee

[84] "*Em relação a Lactogenia julgo que não será o caminho mais adequado, não. Apostar fortemente numa área de estas... savendo que os subsídios também estarão a acabar para o futuro. Sabendo os problemas que existem em termos de exportação... e todo o mais... se este é só o ponto principal acho que não... só por se acho que não fara muito sentido. Não fara muito sentido.*" (regional manager of natural areas conservation service [Armando F.])

[85] "*Aqui* [Lactogenia] *não, aqui não. E essa é a nossa experiência. Nós estamos a falar de um investimento, de um sector que não é gerador de emprego. Estamos a falar... é mas muito pouco! Comparado com os outros é muito pouco. Por tanto, aqui, na pior das hipóteses estaríamos a falar de um de um... de um 1, poucos, poucos a fazer a produção, também não é preciso muitas pessoas, na melhor das hipóteses um 6.*" (regional entrepreneurship support service [João B.])

[86] "*Acho que aí.. não.. cada vez mais a agro-pecuária vive com menos gente. Não me parece que isso crie mais emprego. Daria 2 7.*" (local restaurant manager [João-Alberto K.])

Exact, exactly."[87] (local freelance consultant)

"*At the end of the day it* [*Lactogenia*] *it does not have… agriculture does not have a great impact in cultural life and in culture* [score: 4-7]."[88] (local manager of agriculture service)

Uncertainty might be explained in different ways. Stirling *et al* (2007) found that uncertainty was in fact a condition of how the scenarios were "interpreted and implemented" (p.25). The transnational PorGrow project showed that each context, in that case each country, influenced the level of uncertainty (Millstone and Lobstein, 2007). Previously, Stirling and Mayer (2001) observed that uncertainties were led more by the interviewees' "interests, values, and framing assumptions" (p.545) rather than the intrinsic uncertainty of the options. For example, GM options were generally associated with a higher uncertainty than non-GM options; but some participants' perspectives were clearly different, considering that there was more uncertainty associated with conventional and organic farming. In other applications of the MCM method (Davies *et al*, 2003, p.142; McDowall and Eames, 2006, p.30), some participants reacted to uncertainty by providing a single score whereas others would choose the opposite strategy consisting of using a wide range. The deliberative mapping project (Davies *et al*, 2003) provides a clear explanation for the different reasons for uncertainty. One was the focus used by the interviewee; if the interviewee was commenting from a social perspective this added uncertainty, whereas if she/he was appraising from a personal point of view uncertainty was likely to be lower. Levels of expertise on some criteria complicated scoring and also led to different uncertainties; the lowest technical knowledge in a specific field was associated with the highest uncertainty. This finding was especially relevant in the present research as very often interviewees did not have specialist knowledge on all the criteria (this point is developed later in the section). Finally, timescales played a

[87] "
Interviewee
L... 0 jjajaja 10, na melhor das hipóteses, porque algum interesse...
Researcher
Etnográfico?
Interviewee
Exacto, exactamente." (local freelance consultant [Isabel S.])

[88] "*Acaba por não ter a vida... a parte agrícola acaba por não ter grande grande impacto na vida cultural e na cultura*." (local manager of agriculture service [Felipe X.])

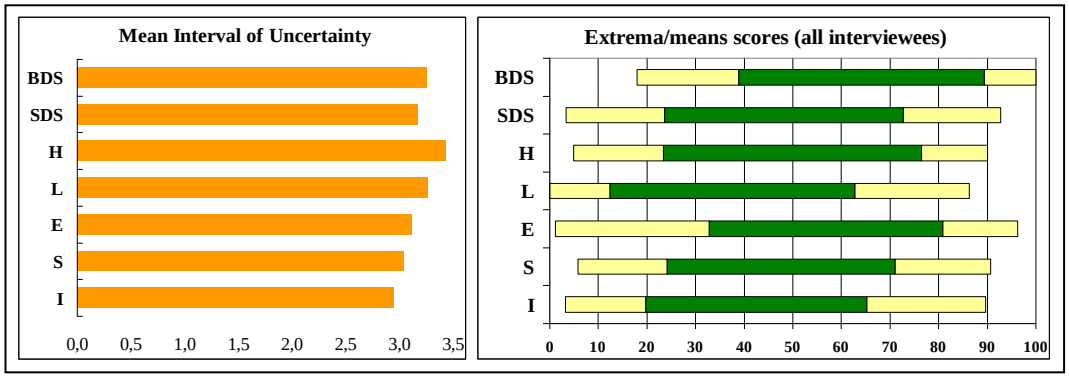
critical role affecting the appraisal of uncertainty in the deliberative mapping project as it influenced related costs of technologies, ethics' evolution (some of the options, such as xenotransplantation raised important ethical issues) and technologies, and scientific development. McDowall and Eames (2006) found that uncertainty related to "visions under particular criteria" (p.29) render the scoring difficult; adding ambiguity to the scores. McDowall and Eames considered that the long-term perspective and the inherent "uncertain nature of the scenarios" (p.29) increased uncertainty. They found that perceived uncertainty was indeed higher than in previous projects using MCM (Stirling and Mayer, 1999; Davies *et al*, 2003), they argued that this was due to the longer timescale. Furthermore, some participants used maximum and minimum scores in their project to express strengths and weaknesses of the options, distorting the aim of the interview but also providing alternative insights to the assessment.

In the participative foresight scenario mapping case-study, Figure 5.8 presents the overall graph alongside the mean intervals of uncertainty. But different ways of considering uncertainty have been observed for the present project: from high uncertainty to moderate uncertainty. Therefore, to study uncertainty in the present research it is interesting to look at the overall graph (Figures 5.6 and 5.8) discarding the interviewees who systematically attached a high degree of uncertainty to their appraisal independent of the scenarios. Indeed some interviewees[89] tended to consistently use the same levels of uncertainty with little variability in their appraisal, while others[90] gave more variety in their appraisal. Interviewees who systematically gave high and similar degrees of uncertainty biased the final outcome as the higher uncertainty they reflected increased the overlapping scores between scenarios.

[89] Regional rural tourism specialist [Daniel A.], regional entrepreneurship support service [João B.], regional manager of nature conservation association [Jaime D.], University professor [Joaquim G.], local restaurant manager [João-Alberto K.], local ecology centre team [Joana and Jéssica L.], Council representative [António N.], regional manager of local development association [Francisco T.], national nature conservation association [Ricardo W.], local manager of agriculture services [Sérgio X.] and local manager of infrastructure and transport services [Artur Y.].

[90] Regional manager of air and sea transports [Marta C.], regional manager of natural areas conservation services [Armando F.], local guest house manager [Luca J.], local entrepreneurship support services [Maria O.], local member of nature conservation services [Alberto Q.], local museum curator [Tiago R.], local freelance consultant [Isabel S.].

Figure 5.8: Extreme (yellow) and average (green) weighted scoring for all interviewees. X-axis indicates low to high performance up to 100. The orange bars refer to the mean intervals of uncertainty (differences between high and low scores) for all interviewees. (BDS: Balanced development, SDS: Standard development, H: *Hotelândia*, L: *Lactogenia*, E: *Ecotopia*, S: *Sociopolis* and I: *Infocracia*)



The differences in the uncertainty patterns can be observed in interviewees' individual maps (Appendix 5.1) but they are more obvious when the mean interval of uncertainty for each scenario is observed. Five interviewees gave a systematically high uncertainty[91] (Figure 5.9); the average uncertainty within this group was almost 70 points, with a range from 67 to 70.8 points. Six other interviewees also systematically gave a homogeneous level of uncertainty for all the scenarios but with a lower degree of associated uncertainty[92]; the average uncertainty within this group was 43.4 points with an average range from 42.5 to 44.2. Interviewees that gave similar degrees of uncertainty were not necessarily less informed or involved than the rest of the interviewees. For instance, the regional member of the nature conservation organisation had been working on the *PReDSA* report and he had informed knowledge on these scenarios but this did not prevent him from systematically giving similar and high levels of uncertainty. Finally, a group of seven interviewees scored with more contrasted uncertainties[93] (average uncertainty of 39.4 and an average range from 28.3 to 43 points). There

[91] From a wide range of fields: environment conservation, tourism, agriculture, local representative and infrastructures and transports [Jaime D., João-Alberto K., António N., Sérgio X. and Artur Y.].

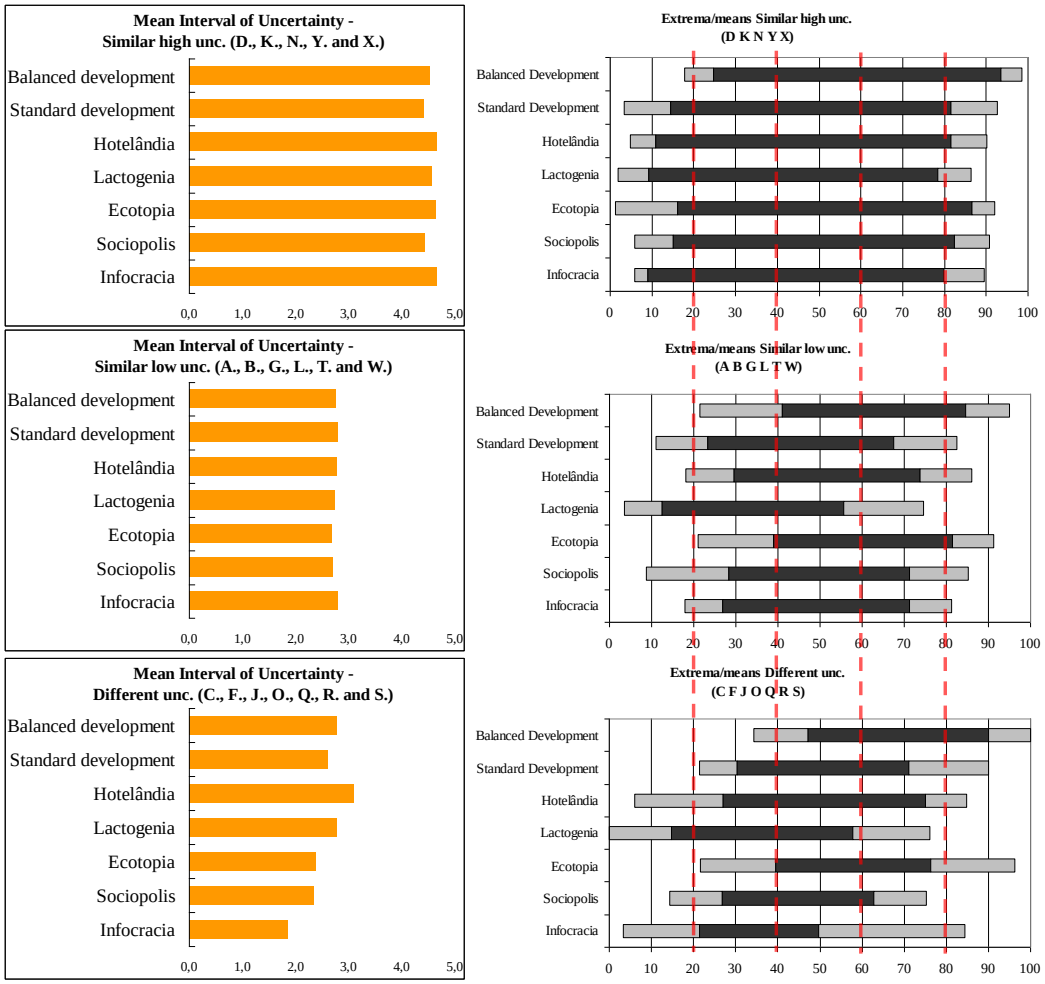
[92] Regional rural tourism specialist [Daniel A.], regional entrepreneurship support service [João B.], University professor [Joaquim G.], local ecology centre team [Joana and Jéssica L.], regional manager of local development association [Francisco T.] and national nature conservation association [Ricardo W.]

[93] Regional manager of air and sea transport [Marta C.], regional manager of natural areas conservation service [Armando F.], local guest house manager [Luca J.], local entrepreneurship support service [Maria O.], local member of nature conservation service [Alberto Q.], local museum curator [Tiago R.], local freelance consultant [Isabel S.].

is not a clear pattern in the sample of more contrasted interviewees. However, 50% of the local islanders were more contrasted in the appraisal, while only 25% of the regional stakeholders (the air and sea transport secretariat and the member of the environmental secretariat) gave contrasted scores. This suggests that locals tended to be more contrasted in their scores, providing different ranges more often in the appraisal; this might testify to a higher degree of concern about the issues at stake.

Breaking up these data permits showing the appraisal following different 'styles' in scoring and considering uncertainty. As can be observed, interviewees generally demonstrated a high degree of uncertainty; even in the group of more contrasted scoring there is an obvious overlap between the scenarios. But assessing separately the group of stakeholders who were more contrasted in their scoring allows observing higher differences between the scenarios. If all the interviewees had used different degrees of uncertainties the final graph would have looked more like the one in the bottom right of Figure 5.9, permitting better highlighting of the scenarios' relative performances than the overall graph (Figure 5.8).

Figure 5.9: Extreme (grey) and average (black) weighted scoring for interviewees who showed a similar high degree of uncertainty, for interviewees that showed a similar but lower degree of uncertainty, and for interviewees that showed more variability in the uncertainty appraised. X-axis indicates low to high performance up to 100[94].



The uncertainty detected in the present research project had different origins. Part of it was inherent in the scenarios, as interviewees identified risks associated with them. These points correspond to the analysis of the qualitative data which is developed in Chapter 6. For instance, the sector-based scenarios promoted specialisation in one sector and, consequently, they were potentially reducing diversification, weakening the capacity of reaction to economic change in one sector of activity, the manager of the national nature conservation organisation observed on *Lactogenia* scenario:

[94] The letters under the titles refer to the pseudonym given to each individual respondent (see Table 4.4).

> "*It is important to diversify, it is important to get ready for the end of the subsidies or the economic basis of the 'cow'.*"[95] (national nature conservation association)

But the holistic SDS also had inherent associated risks that influenced the uncertainty and the perception of risk due to its advocacy of intensification of human activity; the regional entrepreneurship support service manager stated that:

> "*Therefore, I think very sincerely that this scenario of Standard development, can have some dangers for the island. Or for islands similar to Flores. There are some points here that suppose the intensive use of some resources that can later cause some unbalance.*"[96] (regional entrepreneurship support service)

The uncertainty also originated from the level of expertise of each interviewee in the different areas. Some of the stakeholders acknowledged they were lacking knowledge in all the criteria they were using. For instance, the representative of the regional conservation organisation recognised that:

> "*Fisheries… I do not have... this is the problem, it is very vague, the issue for me, me and the Association, we do not have a huge knowledge about fishery.*"[97] (regional manager of nature conservation association)

The limited capacity to assess all the characteristics of complex scenarios supports the inclusion of lay voices to enrich the analysis, enabling the "cross-fertilization within a diverse area of different knowledges" proposed by Irwin (1995, p.166). But it also legitimises non-expert contributions: if decision-makers or expert stakeholders fail to show proficiency in all the scrutinised fields, it is relevant to ask what the difference is between a lay citizen and an expert, and to question these arbitrary labels, at least for the appraisal of such holistic, non-technical

[95] "*E preciso diversificar e, é preciso estar preparados para quando parar essa dependência dos suplementos ou da base económica na vaca.*" (national nature conservation association [Ricardo W.])
[96] "*Por tanto, penso muito sinceramente que este cenário de DES seria um cenário com alguns perigos para a Ilha das Flores. Ou para ilhas semelhantes para a Ilha das Flores. Há aqui algumas questões que implicam o uso intensivo de alguns recursos o que depois poderia provocar ali uns certos desequilibros.*" (regional entrepreneurship support service [João B.])
[97] "*A questão da pesca... eu não tenho.. é a tal questão, é muito difuso, a questão para mim, para mim e mesmo a nossa Associação não temos grande conhecimento a nível de pesca.*" (regional manager of nature conservation association [Jaime D.])

scenarios. As the scenarios (especially BDS and SDS) cover a wide variety of areas it required the interviewees to appraise areas where they were not necessarily confident. In these cases the appraisal was more a guessing exercise than a proper analysis, this favoured wider ranges of uncertainty. The regional entrepreneurship support service manager made some comments in the sense that the holistic scenarios were harder to appraise, increasing the associated uncertainty:

> " Interviewee
>
> *The other two scenarios* [SDS and BDS]*... yes… here it is complicated, because they are more complex, these* [*PReDSA*s'] *are much more limited, these* [SDS and BDS] *are more inclusive. But… it is clearly stronger here* [SDS]*, so, in the worst case… 3…* [thinking] *and in the best case, maybe, 8.*
>
> Researcher
>
> *But with a lot of variability, isn't?*
>
> Interviewee
>
> *Ah, yes. Because it is not possible... here* [*PReDSA*s'] *it is easier…*
>
> Researcher
>
> *Fine.*
>
> Interviewee
>
> *To say yes or not. For these* [SDS and BDS] *it is not so easy*."[98]
>
> (regional entrepreneurship support service)

The time horizon posed also a problem that affected the interviewees' accuracy in the appraisal. Twenty years seemed too distant to enable the stakeholders to

[98] " Interviewee
Os outros 2 cenários.. pois.. aqui é complicado, porque são mais complexos, em quanto esses são muito mais limitados esses são muito mais abrangentes. Mas... claramente mais forte aqui, por tanto, tal vez no pior dos cenários um.. 3.. [thinking] *e no melhor dos cenários tal vez um 8.*
Researcher
Mas com grande variabilidade, não?
Interviewee
Ah, sim. Porque aqui não é possível.. aqui é muito mais fácil.
Researcher
Pois.
Interviewee
Dizer sim ou não. Nesses dois não é tanto." (regional entrepreneurship support service [João B.])

consider all the factors that can play a role, making the appraisal vaguer. The regional specialist on rural tourism acknowledged his limits to do forecasts in his own field of expertise for the next 20 years (he gave similar uncertainties to the scenarios in the appraisal):

> "*I am not able to forecast the tourism for the next 20 years for Flores.*"[99] (regional rural tourism specialist)

But he also made a similar comment on the overall graph and the uncertainty:

> " Researcher
>
> *We can say that the degree of uncertainty is similar for all* […]
>
> Interviewee
>
> *I mean, I could change my mental criteria and I could* [experiment] *you are taking about 20 years. In 20 years... It is adventurous to have nowadays these thoughts.*"[100] (regional rural tourism specialist)

The member of the local infrastructure and transport services also recognised his impossibility to envision the island over the next 20 years (on the wealth creation criterion): "*Yes, in 20 years I do not know how it will be*"[101]. He was one of the interviewees who showed the widest uncertainties in the appraisal (conf. Appendix 5.1).

Finally, independent of the scenarios' characteristics, interviewees' expertise, and time horizon, there were doubts on the effective implementation of the projects, adding uncertainty to the scenarios. In essence a scenario can be positive but if it is not well implemented there are risks of failure. This showed a certain distrust of the capacity of Flores' society to meet the set objectives. The freelance economist's opinion was that the project and the activities are not in essence good or bad, but the way they are undertaken is more decisive:

---

[99] "*Eu sou incapaz de projectar o turismo de aqui a 20 anos nas Flores.*" (regional rural tourism specialist [Daniel A.])

[100] " Researcher

Que o.. digamos que o grado de incerteza é mais ou menos o mesmo em todos. [...]

Interviewee

Quero dizer, podia-se podia rever os meus critérios mentais e havia [experimentar?] estas falando de um prazo de 20 anos. Num prazo de 20 anos, não... já é atrevido neste momento fazer pensamentos desse tipo." (regional rural tourism specialist [Daniel A.])

[101] "*Pois, de aqui a 20 anos não sei o que é que será.*" (local manager of infrastructure and transport services [Artur Y.])

> "*Activities that might seem innocuous* [harmless] *depend on… they might have impact on the environment. It depends, because activities can be undertaken in very different manners; this is why it is dangerous.*"[102] (local freelance consultant)

In the same vein the guest house manager commented that the *Hotelândia* scenario could be either positive or negative for local biodiversity depending on the implementation of the project:

> "*Hotelândia, I do not know if it will be very good, you know? It can vary between 1 and 6, it depends on the Hotelândia. If they build hotels with four stars, these 'horrors'… I am not sure… I know, I am sure that rural tourism should be the objective. But I am not sure where* [policies] *are leading!*"[103] (local guest house manager)

Two interviewees, the regional nature conservation organisation manager and a member of the ecology centre team, argued that the uncertainty also originated from the simple fact that the scenarios depend on the people (implying that the possibility of committing mistakes should be considered):

> " Researcher
>
> *It is interesting because some people scored like you* […] *it* [scoring] *is always coherent, but the scores are very similar.*
>
> Interviewee
>
> *I think that it is very difficult to perform very well for any of them. Score from 5 to 10* […] *none of them can be perfect as they depend of people.*"[104] (regional manager of nature conservation association)

---

[102] "*Actividades que podem parecer inócuas, depende se têm... se têm algumas repercussões com a ética ambiental. Depende porque pode se fazer umas actividades de maneira muito diferentes por isso é um bocado perigoso*" (local freelance consultant [Isabel S.])

[103] *"Hotelândia, não sei se era muito bom estás a ver? Pode ser sempre de 1 a 6, depende da H. Se eles fizeram hotéis como os 4 estrelas, estas merdas... eu não estou seguro... eu sei, estou seguro que seja turismo rural um sítio para onde se ir. Não estou é seguro para onde se vai!*" (local guest house manager [Luca J.])

[104] " Researcher

É engraçado porque alguns fazem como tu [...] *é coerente sempre, é coerente, mas matem uma.. parecem muito as pontuações.* [not relevant]

Interviewee

On *Lactogenia,* in relation to the sustainability of territory resources and ground use criterion, the ecology centre member also stated that uncertainty originated from individuals' behaviour:

> "*I would score, 3 to 5. Because there is an important degree of uncertainty, it depends on the people.*"[105] (local ecology centre team)

In addition, the island is also sensitive to external changes, exogenous factors, which could jeopardise its development, as pointed out by the restaurant manager:

> "*There are external factors that affect us. And we have already seen that more than one time, isn't? Global problems* [...] *economic crisis, there is a problem, some war... there are external factors that affect the market* [on tourism]. *So, we might have an ideal situation, but if external factors are not favourable to us… even if we have the means, it is not going to be good, from my point of view.*"[106] (local restaurant manager)

The recognition of the existence of external factors that can potentially threaten the island is directly linked to small islands which are "vulnerable to external shocks" (Campling, 2006, p.245).

The six reasons for uncertainty detected in the present research are:

- the inherent potential risks associated with the scenarios, for instance environmental risks associated with intensification of human activity;
- each individual's level of expertise is challenged by the project because it invites them to appraise attributes that are not necessarily

---

Eu penso que é muito difícil ter tudo muito bem, seja qual o que for. Ter 5 a 10 [...] *nenhum deles pode ser perfeito dependendo das pessoas.*" (regional manager of nature conservation association [Jaime D.])

[105] *Se calhar eu ponha, 3 5. Porque há um grado de incerteza porque a gente depende das pessoas.*" (local ecology centre team [Jéssica L.])

[106] "*Mas há factores externos dos quais dependemos. E nós vimos isso já mais do que uma vez, não é? Questões ao nível mundial* [...] *crise economica, há um problema, alguma guerra... pronto há factores externos ao meio onde estamos dependemos do mercado. Por isso.. podemos ter as condições ideias aqui, mas se os factores externos não nos foram favoráveis.. por mais que.. tenhamos méios não nos vai favorecer, do meu ponto de vista.*" (local restaurant manager [João-Alberto K.])

familiar to them, tending to increase the gap between negative and positive perspectives;

- complexity of the holistic scenarios (SDS and BDS) increases the difficulty on the assessment and widens the gap between optimistic and pessimistic perspectives;
- the time horizon (20 years) is too long to allow foreseeing the scenarios with enough conviction, therefore influencing the perception of uncertainty;
- the results depend on the practical implementation of the policies, rather than the policies themselves;
- the existence of exogenous factors influencing the island's future positively or negatively.

Islands are characteristic by having intrinsic environmental and economic vulnerabilities (Briguglio, 1995; UN, 1998a; Hache, 1998; Pelling and Uitto, 2001; Armstrong and Read, 2002; Kelman and Lewis, 2005; Campling, 2006; Guillaumont, 2010; Grydehoj, 2011, conf. Chapter 2: Section 2.3), therefore it is reasonable to observe that this elevated uncertainty is, directly or indirectly, explained by islands' conditioning factors to some extent.

5.4.1.2 Criteria and criteria weighting

Most of the criteria used in the appraisal had been pre-selected in the focus groups (Chapter 4: Section 4.2.2), therefore stakeholders could only add criteria. But only six out of nineteen did so (they usually added only one criterion). Criteria were seen by participants as "*keystones*" of the appraisal[107] (council representative). Overall, stakeholders found it obvious to use criteria in the appraisal and they supported the fact that attributes were previously chosen, otherwise they felt it would have been "*too subjective*" (regional entrepreneurship support service):

> " Interviewee
>
> *A series of criteria, it is correct yes. It makes sense. It is the only way to appraise without being too subjective, too generic, this way we have criteria which were selected by individuals and we appraise the scenarios with them. Previously…* [interrupted]

[107] "*Fío conductor*" (Council representative [António N.])

Researcher

Because in this process normally it is the interviewee himself that proposes his own criteria. But it is for very technical cases.

Interviewee

So, previously selected. Yes. I think that it was a good option." [108]

(regional entrepreneurship support service)

Or too long and demanding an interview (local ecology centre team and freelance consultant):

" Researcher

You would have liked to choose your own criteria?

Interviewee 1

No! We would have spent all the night here. [laughs]

Interviewee 2

Yes. These criteria were chosen by all of them [lay citizens], *isn't?*

Researcher

Yes.

Interviewee 2

It was the best way, I think so. I agree." [109] (local ecology centre team)

---

[108] " Interviewee

Uma série de critérios é correcto, sim. Faz sentido. Aliás é, é a única forma de conseguir avalia-los se não é uma avaliação muito subjectiva, uma avaliação muito genérica assim temos critérios que foram seleccionados pelas pessoas e agora vemos nesses cenários. Previamente..

Researcher

Porque este processo, este programa.. normalmente é o próprio entrevistado a desenvolver os seus próprios critérios. Mas é para casos muito.. técnicos, realmente...

Interviewee

Por tanto que sejam escolhidos previamente. Sim. Parece-me que foi uma boa opção." (regional entrepreneurship support services [João B.])

[109] " Interviewer

Mas vocês tenham gostado de escolher os vossos próprios critérios?

Interviewee 1 - Local ecology centre team [Joana L.]

Ah não! se não a gente passa a noite toda aqui. Jajaja

Interviewee 2 - Local ecology centre team [Jéssica L.]

É. Esses critérios foram escolhidos por todos, não é?

Interviewer

Sim.

Interviewee 2 - Local ecology centre team [Jéssica L.]

Foi a melhor maneira, acho que sim. Concordo." (local ecology centre team [Joana and Jéssica L.])

"*Do you agree that the criteria were pre-selected?* [reading the enquiry]: *They must be pre-selected, I think so. Otherwise you have to deal with a lot of diversity…* […] *I think that it is important because maybe people try to… would not be able to define criteria and I think that it helps a lot and you cannot ask so much to the stakeholders* [interviewees]."[110] (local freelance consultant)

The local manager of the entrepreneurship support service also considered that the interview was rather arduous and long, provoking hasty scoring:

" Researcher

Do you think that the interview is intense?

Interviewee

Yes. [...] *I know that it is important. But I become tiring, do you understand? It requires a lot of time focusing on that, and at the end I do it fast, it is long and sometimes I do not think very well.* […] *If it was 2 or 3 criteria for each scenario, one or two… but it is fine, we are going to finish it* [the appraisal]."[111] (local entrepreneurship support service)

As presented in Chapter 4: Section 4.2.5.3 the criteria weighting process was innovative; its analysis is now undertaken. Figure 5.10, created with the software MCM-Analyst, expresses the overall normalised weightings for the criteria

[110] "*Critérios: sim, de que maneira vás a avaliar se não fosse em base a critérios? Tens que definir a priori critérios, é óbvio. Concorda que critério sejam escolhidos previamente: têm que ser escolhidos previamente. Acho que sim, porque se não cais numa diversidade...* [...] *acho que é importante e porque muitas pessoas se calhar vão buscar... não saberiam definir critérios e por tanto acho que facilita muito e não podes exigir tanto das partes interessadas.*" (local freelance consultant [Isabel S.])

[111] " Researcher

Achas que a entrevista é um bocado intensa?

Interviewee

Sim. [...] *Não, é importante, sei que é. Mas tornasse muito cansativo, percebe?, é muito tempo aqui fixado nisto, a gente acaba por fazer a presa, porque se não fica muito tempo e depois não pensa muito bem as vezes na.. e depois uma coisa, aparece outra, mas pronto.* […] *Pois, há muitos critérios e muitos cenários.*

Researcher

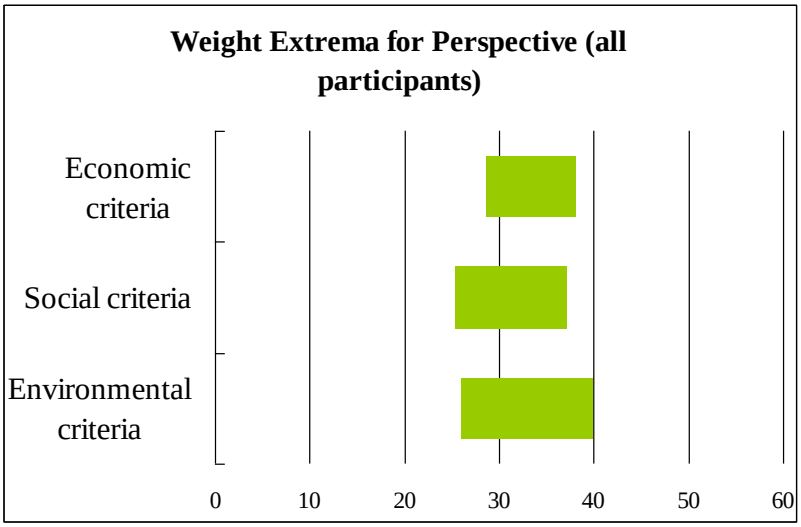
Pois.

Interviewee

Se fosse, 2 ou 3, 2 ou 3 critérios por cenário, ou um ou dois... está bom, mas vamos ter que acabar, não é? Por tanto, vamos lá." (local entrepreneurship support service [Maria O.])

grouped by issue, the bars represent the proportion in which the weights were distributed among the different issues and the length of the bar being the difference between the highest and the lowest weighting associated with each issue. In other MCM applications these graphs appear more contrasted. Here the bars are rather homogeneous because the interviewees had to appraise almost the same criteria per issue, and the weightings were similarly given, averaging each issue around a third of the total weightings (once normalised). It can however be observed that environmental criteria got more dispersion but at the same time it was the issue that got the highest maximum weighting.

Figure 5.10: Normalised criteria weightings given by the participants for the groups of issues considering only core and discretionary criteria (furthest to left = lowest, furthest to right = highest). Participants scored each criterion up to 100 considering criteria hierarchy. The figure shows the proportion in which weighting were distributed.



As shown in Figure 5.10 disparity in weightings appears higher for environmental criteria. But, as illustrated in Appendix 14 (Figures A14.1 and A14.2), most of the disparity in the environmental issues is explained by the lower importance that some interviewees gave to the air contamination criterion. This seems coherent as air quality is not a crucial factor on the island; this environmental criterion was the least chosen by the focus groups (Table 4.2), which is congruent with the low weighting given by stakeholders. For instance, this conversation with the member of the regional secretariat for air and sea transport explains how the air contamination criterion was weighted:

“ Interviewee

Air contamination does not have a huge impact... […] *20* [weight].

Researcher

If we were talking about Lisbon or a big city, it would be more important.

Interviewee

Yes.”[112] (regional manager of air and sea transport)

The national manager of the nature conservation association also considered that air contamination criterion was not important for the island (he even gave it the lowest weighting for the criterion):

“*Air contamination, there is not much, you can give 1*[10]. [laughs] *It is Flores!*”[113] (national nature conservation association)

Economic criteria have a lower dispersion; none of the economic criteria have very low scores suggesting that all are considered similarly important (only wealth creation criterion got low scores). But some stakeholders considered that the wealth creation criterion, related to the island’s economic potential, would never be high; considering the size of the economy, people would never make huge fortunes (conf. Chapter 6: Section 6.2.2). The criteria weighting process demonstrates that the three attributes grouping the criteria were all similarly valued; suggesting that there is a need to aim at equilibrium between the economy, society and the environment. The differences in the *extrema* weights were mostly explained by specific cases (such as the air contamination criterion) but this should not mask the fact that there was, overall, a balanced value given to the criteria. The perspectives’ grouping is now analysed to identify the effects of

[112] “ Interviewee
Contaminação atmosférica não tem grande impacto...
ME
Pois, para a ilha!
Interviewee
20.
ME
Se fora, por exemplo, o caso de Lisboa ou cidade grande, tem mais importância.
Interviewee
Sim.”

[113] “*Contaminação atmosférica aí é muito pouco, podes deixar 1 mesmo. Jejeje e as Flores pa!*”

the interviewees' background in the appraisal and to analyse the presence or absence of convergence between the different groups of interviewees.

5.4.2 Perspectives' grouping

MCM-Analysis software (Stirling and Champion, 2009a) brings with it the opportunity to group the scoring following different participants' characteristics and to see if it is possible to observe tendencies or differences of sensibilities between the perspectives. In this analysis the groupings are: stakeholders' area of activity, professional status, location, gender and age. This step of the study is important in the sense that it allows deeper exploration of the quantitative data, looking for possible convergence or divergence between and within the groups. Therefore it informs the relevance of the quantitative appraisal method for the present case. It is also crucial because it informs whether or not there are grounds for consensus.

First, interviewees were grouped according to their main area of activity[114] (Table 4.4 and Figure 5.11). The area of activity is important as it might be decisive in stakeholders' perceptions. The objectivity of the scoring process is then challenged; has the professional background defined the scoring or not? This has been identified in other projects as "strategic behaviour" (Burgess *et al*, 2007, p.316) or "strategic scoring" (McDowall and Eames, 2006), these ideas are developed in the previous section (Section 5.4.1). The graphs in Figure 5.11[115] and Figure 5.12 reflect that, independent of professional background, the BDS scenario was preferred.

[114] In order to create groups some of the participants were regrouped considering their secondary activity. Therefore the university professor and the freelance consultant were grouped as economists. The Lajes das Flores' representative is also in charge of cultural activities in the Council; which is why he was grouped with culture-related individuals. Without this re-grouping these participants would have appeared in groups with only one individual.

[115] Extreme (light orange) and average (brown) weighted scoring for the different groups of interviewees. X-axis indicates low to high performance up to 100. The agriculture graph appears in only one colour because there was only one interviewee from this group, therefore the mean and the extreme scores are the same.

Figure 5.11: Perspectives grouping following the areas of activity (in brackets the number of participants considered in each group). Scenarios: 1: Balanced Development, 2: Standard Development, 3: *Hotelândia*, 4: *Lactogenia*, 5: *Ecotopia*, 6: *Sociopolis* and 7: *Infocracia*

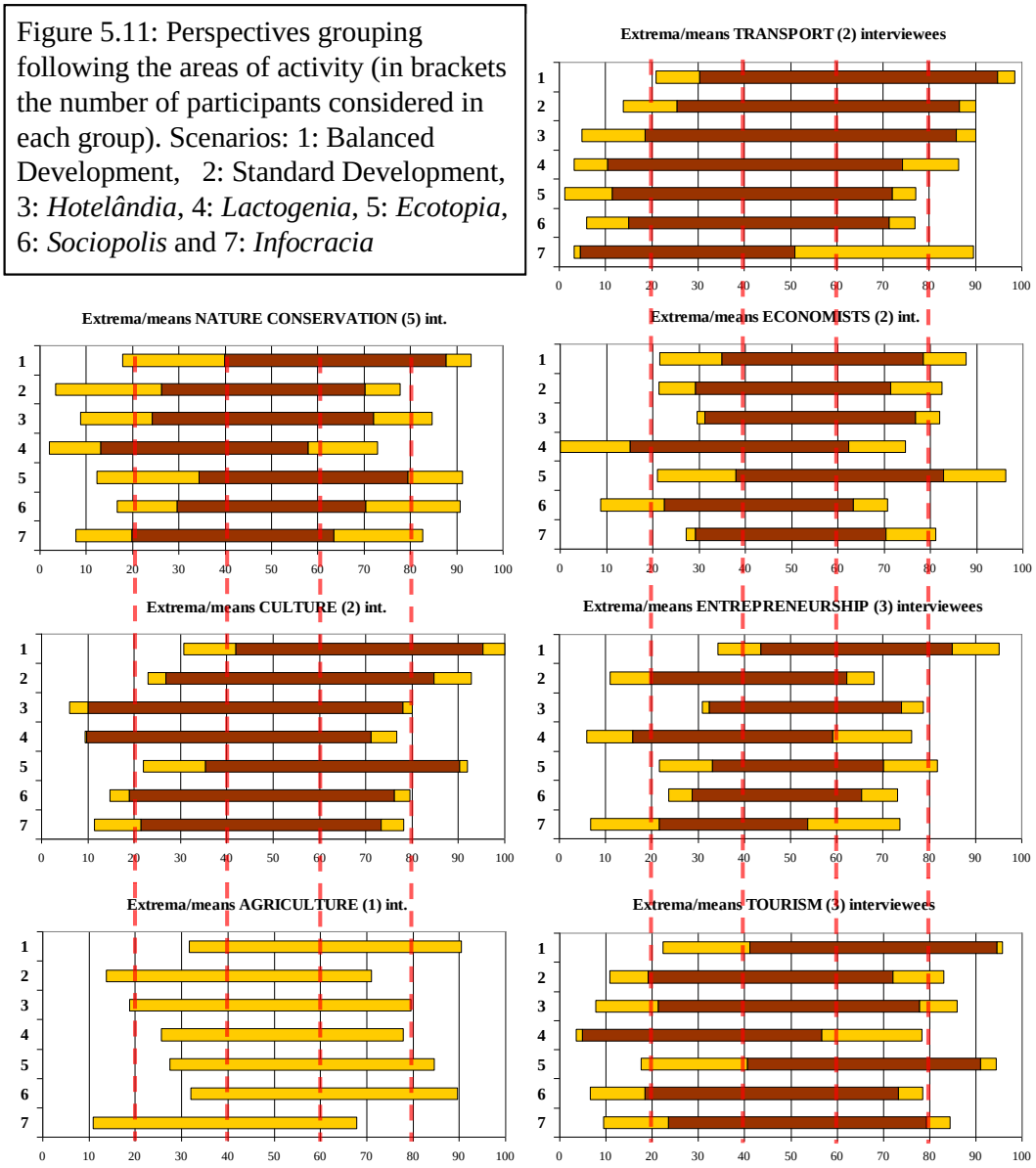
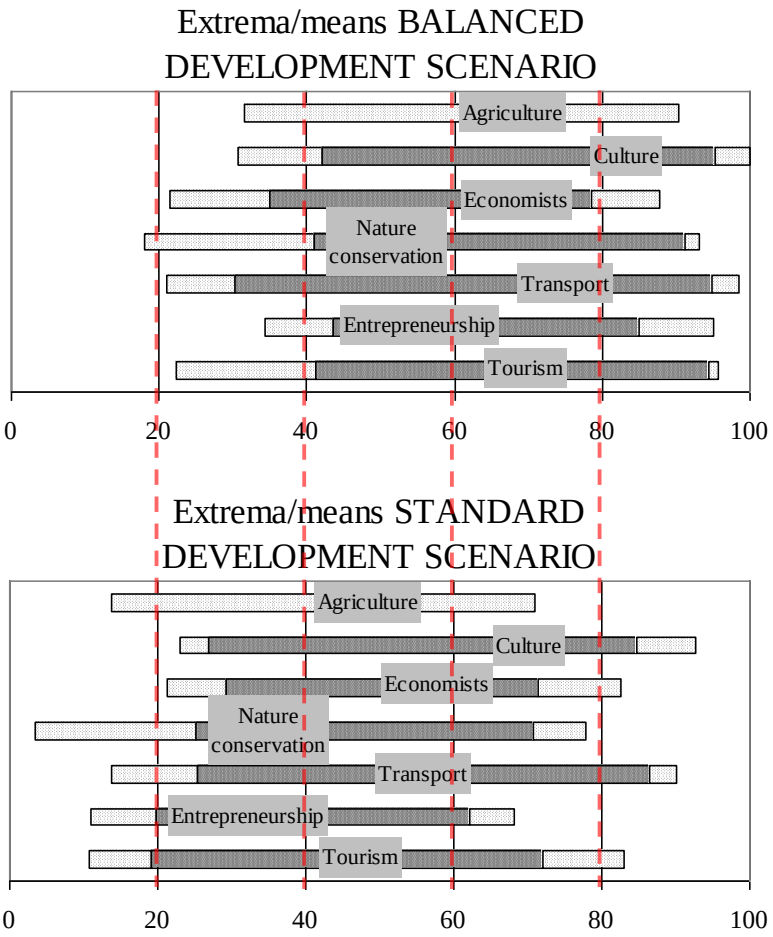


Figure 5.12: Standard and Balanced development by participants' activity groups (light grey: extrema, dark grey: mean)[116]



The three stakeholders related to the tourism sector gave higher scores to the BDS and *Ecotopia* scenarios than to *Hotelândia* or SDS. Despite the fact that the latter scenarios favour an intensification of the tourism sector activity they preferred the type of development proposed in the scenarios that propose a less productivist vision of the island (the preferred tourism sector strategy for the island is treated in depth in Chapter 6). As well it is interesting to see that the two economists and the three enterprise-related stakeholders favoured BDS overall to SDS with a lower relative degree of uncertainty associated (Appendix 5.5). For the stakeholders linked with enterprise activities it is relevant to see that SDS is one of the less valued scenarios and the one with the most elevated mean and relative uncertainties associated. *A priori* it could seem that the SDS would have been

[116] There was only one interviewee from the agriculture sector; this is why only the extreme scores are represented.

preferred by this group of interviewees, because in theory SDS prioritises economic growth and wealth creation while BDS implies restructuring the economy in the medium-term and it tends to involve less intensive socio-economic activities, not prioritising wealth creation in the short or long term. The same judgement could have been made with the decision-makers that work in the transport and infrastructure services; but they appraised BDS more positively than SDS, in spite of the former being a scenario much more cautious in infrastructure development. The interviewees linked with nature conservation, with five stakeholders the most numerous group, preferred the BDS and *Ecotopia* scenarios, which could be anticipated as these scenarios value nature conservation and base the island's development in sustainable behaviours; however they still attributed a relatively high mean uncertainty to these scenarios (Appendix 5.4). The two interviewees directly related with cultural activities also showed a preference towards BDS.

Nature conservation and tourism-related individuals were the groups that gave some of the worst scores to the *Lactogenia* scenario. In Chapter 6 the idea that *Lactogenia* (by extension, intensive agriculture) is not positive for tourism or for the environment is developed. Even the manager of the local agriculture service (the only individual directly related with agriculture, which is why the graph has only one colour bar), was not especially positive towards the *Lactogenia* scenario, valuing BDS, *Hotelândia*, *Ecotopia* and *Sociopolis* scenarios more. He acknowledged that Flores Island could not support intensive farming and he argued that the model for agriculture should be the BDS:

> "*We will never have intensive farming here, because of the island's geography and the farm land division.*"[117] (local manager of the agriculture service)
>
> "*It is clear that BDS is the most adequate, but we shall never forget that agriculture will always exist… it cannot be considered as a threat. It must be seen as a help, because sustainable agriculture will not threat the environment, it can*

[117] "*Aqui nunca se consigue fazer agricultura intensiva como está aqui porque atendendo a oreografia da ilha e a divisão das pastagens.*" (local manager of agriculture services [Sérgio X.])

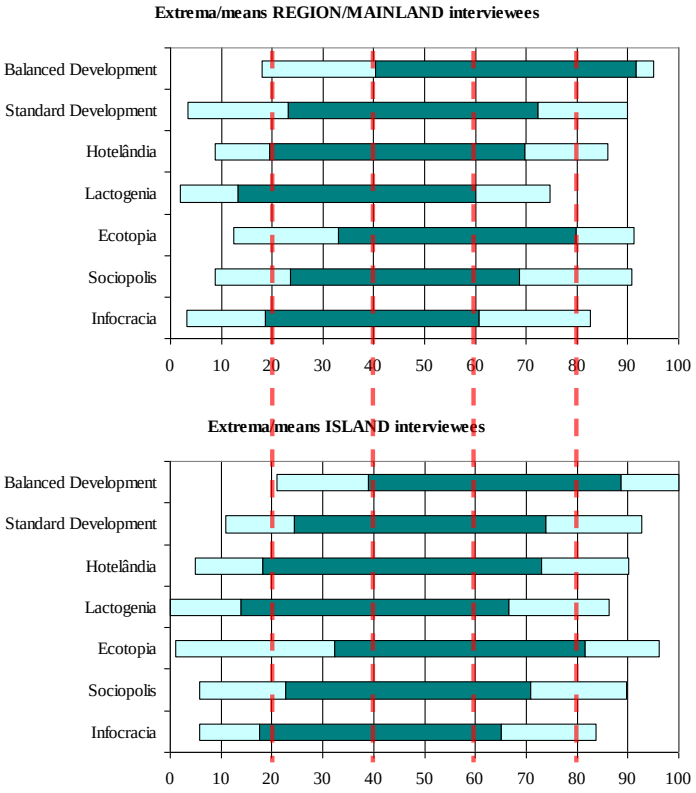
somehow contribute to it."[118] (local manager of the agriculture service)

However, he gave higher minimum and maximum scores to *Lactogenia* in the farming criterion. But for him, an agriculture-based scenario could not perform very well in nature conservation and social fields. The scores for the three environmental criteria (waste, biodiversity and water) were lower than BDS; as well he tempered *Lactogenia*'s good score in 'Sustainability territory resources and ground use' criterion to good practices. Social criteria related to education, culture and lifestyle also undermined the overall assessment he gave to the *Lactogenia* scenario, "*agriculture does not have a great impact in cultural life and in culture*"[119] (this quote is already mentioned in Section 5.4.1.1). He agreed with the final graph (before and after the criteria weighting) that showed how SDS and *Lactogenia* scenarios were performing worse than other scenarios.

Other interesting groupings to observe are by location and by professional status. Balanced and Standard development scenarios score similarly for islanders and non-islanders, as can be seen in Figure 5.13 quantitative values (means) do not vary too much between different groups, showing that there is a convergence of points of view; there is no obvious dichotomy of perspectives. This should be seen as an opportunity as it might mean that the locals and the region would agree that such a development (BDS) is preferable for Flores Island; such agreement being a guarantee of policy implementation and it shows the existence of scope for consensus. It also demonstrates that the interviewees' geographical situation did not play a decisive role in the quantitative appraisal. But as was observed in Section 5.4.1.1, locals were overrepresented in the group of interviewees who scored the scenarios with lower and more varied uncertainty; therefore it might mean that locals tended to produce a more contrasted appraisal.

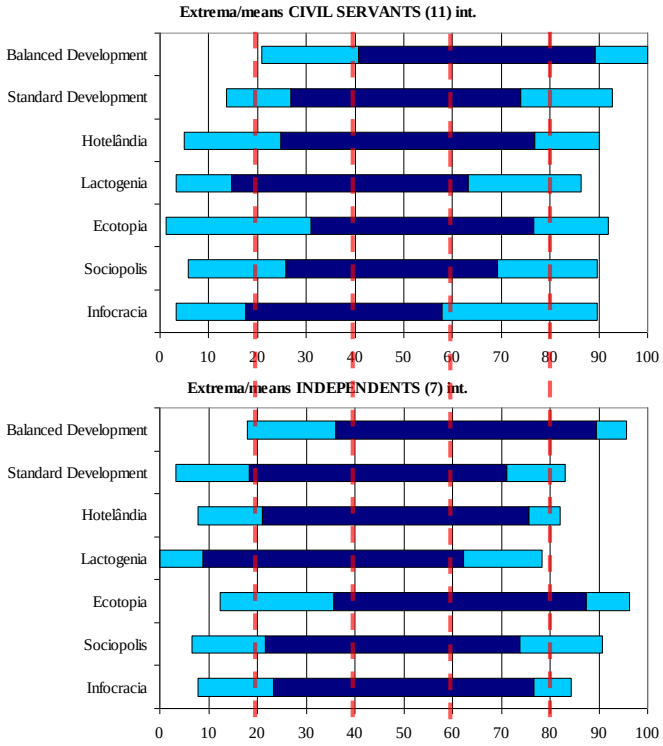
[118] "*É claro que o cenário de DEQ será o mais adequado, mas nunca esquecendo que a agricultura terá sempre... não pode ser vista como uma ameaça. Há de ser vista como uma ajuda, porque a agricultura sustentável não vai atacar nada o ambiente, todo o contrário, até pode contribuir para algunas coisas.*" (local manager of the agriculture service [Sérgio X.])
[119] "*A parte agrícola acaba por não ter grande grande impacto na vida cultural e na cultura.*" (local manager of the agriculture service [Sérgio X.])

Figure 5.13: Perspective grouping following location
(ten islanders and eight non-islanders)



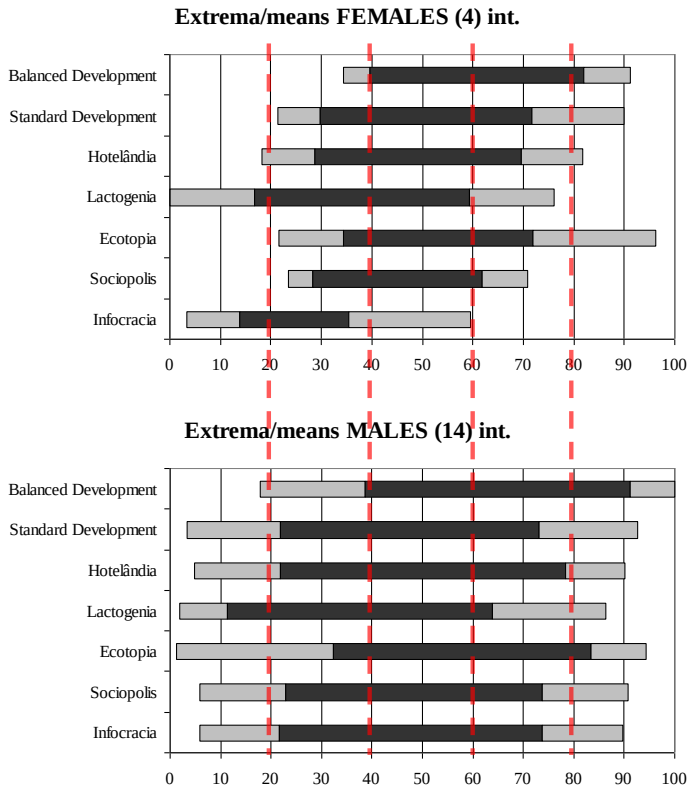
In the same way, independents and civil servants (Figure 5.14) appraised the scenarios very similarly. This is an important factor to consider as policies, produced by decision-makers (who comprised the civil servants group) should be more effectively applied when independents agree with them. Evidently for both location and professional status there are some differences in the appraisal, for instance, independents valued *Ecotopia* better than civil servants, but overall the rankings for the main scenarios (BDS, SDS, *Hotelândia*, *Lactogenia* and *Ecotopia*) are the same. These interviews were not designed as a survey of the citizenship perspective but the homogeneity of the points of view reveals, at least, some degree of implicit agreement on the visions. When the uncertainty is appraised it is perceptible that independents attached a high degree of uncertainty to all the scenarios (Appendix 5.4); however, considering the relative degree of uncertainty, BDS has less associated risk for both groups.

Figure 5.14: Perspective grouping following professional status



Alternative groupings can be made with the objective of seeking other tendencies, such as the quantitative appraisal following interviewees' differences in gender and age. The DM project (Davies *et al*, 2003, p.165) studied participants' perspectives by gender in four different lay citizens' panels, DM demonstrated that the MCM appraisal did show overall convergence, however the arguments panellists provided to support their assessment betrays differences. In the case of the present research, the graphic representation of this quantitative appraisal for individual interviews to decision-makers and key informants is novel. Gender differentiation could reflect whether gender explains different sensitivities, "gendered styles of appraisal" (Davies *et al*, 2003, p.201). Davies *et al* (2003, p.54), raised the issue of the role of gender in the sensing and the appraisal of risk. As is shown in the graph (Figure 5.15 and Appendix 5.5), women showed more certainty when scoring the scenarios (mean uncertainty bars are shorter for all the scenarios).

Figure 5.15: Perspective grouping by gender

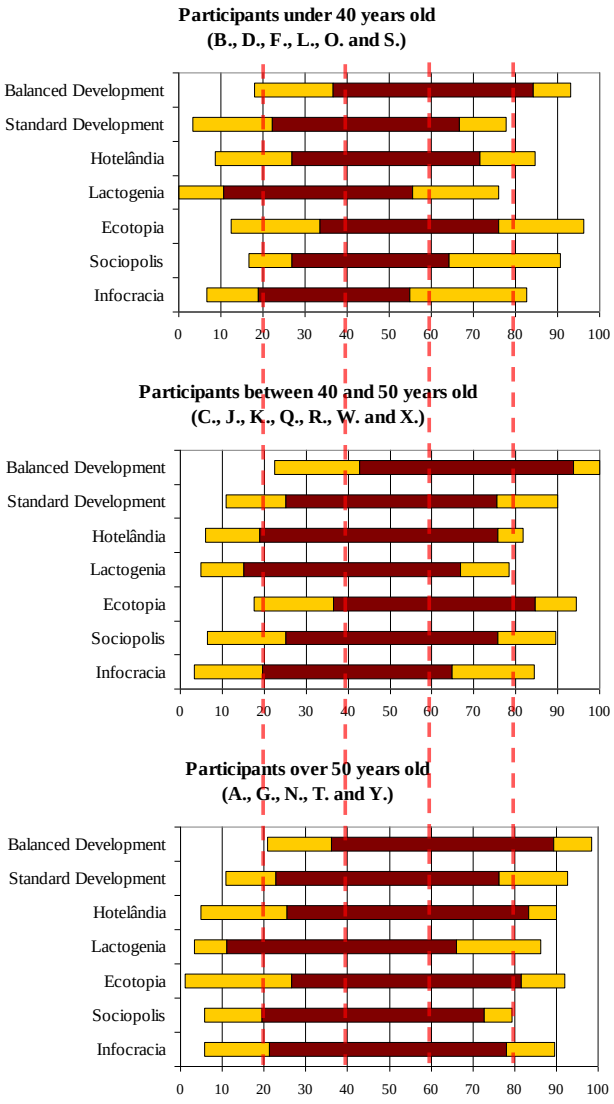


But this difference in the appraisal might be explained simply because there were fewer women interviewed than men. Only four women were interviewed in the MCM step (originally seven were interviewed in the scoping interviews), and 14 men participated in the final interview, increasing the perceived variation of the scores, this gap in the sample explains part of the differences. But some interesting points can be observed. The women were over-represented in the group of interviewees that gave contrasted scores: they represented almost half of the members in this group (Figure 5.9). Only the ecology centre team, consisting of two women, scored the scenarios similarly; therefore women tended to be more categorical in the quantitative appraisal. There are similarities in the scoring. For instance, BDS scored the highest (maximum and minimum means) independent of gender. *Ecotopia,* with the second highest minimum score (the second maximum score for males and second equalised with SDS and *Hotelândia* for females), is the second best ranked scenario. These two are followed by SDS and *Hotelândia*. This gives an indication of the interviewees' similar sensitivity on the island's needs and future development options. But there are some subtleties interesting to observe. Focusing on BDS, the higher maximum score given by men seems to

indicate more confidence in that scenario. In fact, overall, the maximum score given by women is lower than men's (but not SDS which has a similar score). It is interesting to see that *Sociopolis* has a higher minimum score and less associated uncertainty for women, which might reflect a higher awareness of social matters. The graph also shows a certain aversion female respondents had towards the *Infocracia* scenario. This scenario is clearly scored much worse by females than males. Whereas males pointed at *Lactogenia* as the worst scenario (but with important overlapping with the other scenarios) *Infocracia* clearly attracted the worst scores from female respondents.

As noted above, MCM-Analyst software allows grouping under age criterion (Figure 5.16 and Appendix 5.5) which could help to explore if age influences how interviewees score the scenarios. The grouping by age is novel for studies using the MCM method; therefore there was a lack of references on the subject. The age grouping follows a basic decade pattern; however the interviewees under 40 and the interviewees over 50 were grouped to prevent underrepresented age groups (groups with only one or two individuals). These groupings indicate that there are some differences in how the interviewees scored the scenarios. Younger stakeholders' scores were associated with less uncertainty but also with more variety in the scoring than their elders. If the relative degree of uncertainty is considered, it is interesting to observe that the younger generation associated less and similar uncertainty to BDS, *Ecotopia* and *Sociopolis*. Whereas the other groups gave a higher degree of uncertainty to the *Ecotopia* and *Sociopolis* scenarios. The scenario that had the highest level of uncertainty for all the age groups was *Lactogenia*. It is important to note here that, overall, the younger groups gave lower maximum scores to the scenarios. This could reflect a higher level of concern or more pessimism on the subject matter for the younger generation.

Figure 5.16: Perspective grouping by age
(years old<40, 40<years old<50 and >50 years old)[120]



5.5 Summary

Chapters 4 and 5 have addressed the procedural research questions of the thesis. The analysis of its participatory dimension and the application of the novel methodology are now summarised. The specific foresight scenarios for Flores Island were built in the sequence of scoping interviews with specialised stakeholders and focus groups with lay citizens; this succession answers the

[120] The letters under the titles of the graphs refer to each individual interviewee, see Table 4.4.

objective of developing the scenarios in a reflexive and participative way. The Standard and Balanced development scenarios arose from the themes treated in the individual interviews with specialised stakeholders, and corresponded with two different modalities of development which could be foreseen for the island. These narratives addressed complex development challenges in an accessible (non technical) way, aiming at the inclusiveness of lay citizens. The next step in the scenario-building exercise consisted of a public appraisal of the draft scenarios in seven focus groups. The participants were confronted with the visions and had the opportunity to comment on them, bringing their perspectives and validating the scenarios. Their contributions informed the stakeholders' scenarios and were embedded within them to create final scenarios (later appraised in the multi-criteria step by the specialised stakeholders). The different arguments and ideas given by the participants were identifiable thanks to a distinctive format in order to add transparency to the process and make information sharing as straightforward as possible. Thanks to this, the stakeholders could 'track' and identify the origin of the inputs. This aimed at reinforcing the research project's reflexive dimension. But there were some methodological limits to how the scenarios were built as it was a rather researcher-led exercise in which the researcher chooses how to build the scenarios and what information is in them; however the purpose-built scenarios were accepted by the participants.

Special attention was given to creating a participatory process designed to incorporate a wide range of participants, from regional and local decision-makers to lay stakeholders (referred as lay citizens). A group consisting of decision-makers, civil servants and key informants (interviewed individually in the scoping and the appraisal interviews) was the result of pre-selection and 'snowballing' processes. Care was taken to include a wide variety of perspectives from the first step; however the 'snowballing' process proved to be effective (especially for key local informants) to complete the list of participants to the project. Lay citizens were recruited to analyse the draft scenarios in groups, with five groups convened by sector of activity or age (young adults, farmers, fishermen, tourism sector and industry/handicrafts) and two open to the wider population. In all a total of 56 individuals - 44 of them locals - participated in the project. They all had the

opportunity of contributing to the project with their specialised knowledge, but also with their locally informed tacit lay contributions they could advocate for their preferences. Indeed, analysing multi-disciplinary visions encouraged participants to go beyond their field of specialisation, questioning the conventional differentiation between specialised and lay knowledge holders.

But the uncertainty encountered in the MCM appraisal is only in part explained by interviewees' limited expertise. The differences between *maxima* and *minima* scores were also a consequence of the time horizon, 20 years, and a certain mistrust of the correct realisation of the scenarios. Discriminating between the styles in scoring allowed isolating those interviews where scoring was more contrasted; in this group there were fewer similarities between the scenarios, better highlighting preferences, but obvious overlap was still perceptible. This revealed the limits of this quantitative appraisal method as it did not help to point to a decisive emerging scenario.

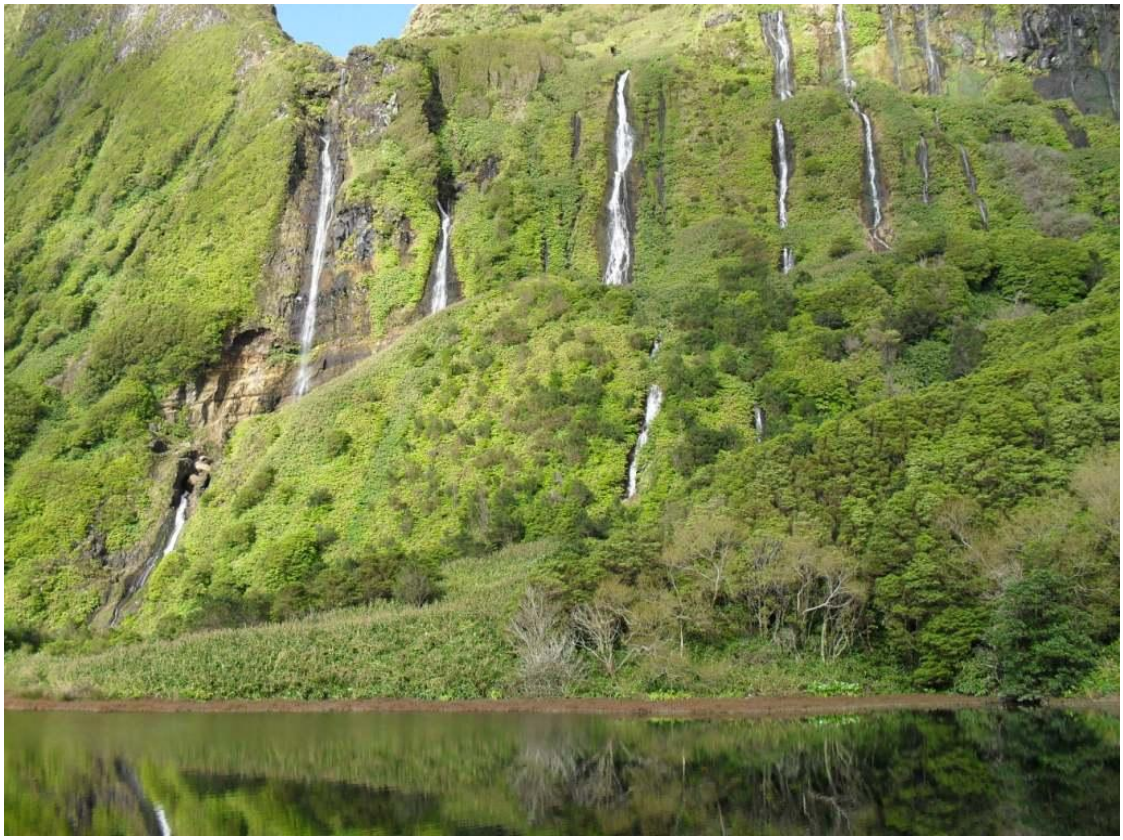
The second pillar of the research was the application of the MCM method in a participative way. The innovative adaptation of the MCM method resides in spreading the appraisal exercise through the different steps of the project; two procedural novelties were incorporated into the process. One, discussed above, was that the scenarios were defined in earlier stages of the project and incorporated lay citizens' contributions, thereby asking stakeholders to appraise the entire portfolio of scenarios and not permitting them to propose additional scenarios. The second novelty was that the interviewees had to use a list of criteria pre-selected in the focus groups; this meant that the appraisal was directly influenced by local population priorities and concerns. Overall, the MCM appraisal method provided the opportunity to explore the scenarios in depth; at least 15 economic, social and environmental criteria were used in the assessment and the interviewees had to reflect on optimistic and negative situations for each of the seven scenarios. Although the graphs did not allow highlighting a clearly preferred scenario, they allowed 'mapping' a series of parameters relevant for understanding the proposed alternatives as well as interviewees' position and expectations. Chapter 5 has analysed the procedural aspects of the investigation

concerning quantitative data, but the MCM method and the methodology proposed in this project also provided the opportunity to gather a series of informative qualitative data.

MCM quantitative data were grouped following the stakeholders' different characteristics: area of activity, location, professional status, gender and age. This organisation provided an opportunity to study trends in the appraisal following the interviewees' background or demographic characteristics. The location and professional status did not show any discernible differences. Areas of activity and gender showed more differences but these are rather inconclusive as they might be due to the fact that there was a marked difference in the number of interviewees in the different groups, therefore differences in appraisal between these groups must be carefully considered. Age grouping was not so much affected by the differences in the size of the groups, and the charts revealed some appreciable variations in the perspective: younger respondents (under 40 years) seemed less positive than their elders but at the same time they scored with slightly less uncertainty, proving to be more categorical in their quantitative appraisal.

Chapter 6, which follows, analyses the qualitative data gained through this innovative methodology and considers it in the context of Flores Island's sustainable development pathways.

Chapter 6: Contributions to sustainability in small islands



Poço da Alagoinha (Lajes das Flores).

6 Contributions to sustainability in small islands

6.1 Introduction

By means of developing and appraising holistic scenarios, research participants were able to provide key information on how they believe a sustainable island could be and what the requirements are to achieve this vision. One of the limitations of LA21 processes has been the failure to actively promote the development of integrated visions (UN, 2012b), instead there has been a diversity of sector-based projects not necessarily integrated with each other (conf. Chapter 2). By means of working on holistic scenarios the present research follows McCall's proposal of a "multi-dimensional" knowledge of islands (1994, p.98). The preference for BDS (conf. Sections 5.3.2 and 5.4.1) is a strong statement about a desired future (even though strong uncertainties betray the existence of risks). High levels of uncertainty clearly demonstrated that any scenario faced challenges that could potentially lead to unsustainability (Chapter 5: Section 5.4.1.1).

The information analysed in this chapter develops how the participative foresight scenario mapping methodology informed preferred sustainable futures for an island in a sound way from islanders' perspective (see Table 4.4 and Table 4.5), participating to the debate on this specific field of research. As illustrated in Chapter 5: Section 5.4.2 (Figure 5.13), there were no important differences in the quantitative appraisal between locals and non-locals showing a convergence of points of view; moreover, all the interviewees were islanders (Azoreans) and they were familiar with the case study island. This is why their qualitative contributions were treated simultaneously with the contributions from the local research participants. These appraisals brought to light local understanding of sustainability and the key actions needed to steer the transition towards sustainability of an island. The holistic foresight scenarios for sustainability used

in the present research should help to produce coherent projects with a preferred scenario. Therefore, this holistic perspective has also provided an opportunity to inform a great variety of coherent strategies for development. These indications should help inform local decision-makers' long-term strategies, as they are built on long-term horizons, but they also imply actions that can be undertaken in the shorter term.

The next section will analyse islanders' awareness and contributions to sustainability requirements. Section 6.2.1 will link the references on islands as potential Utopias/heavens, testifying to their value for locals and visitors. This idyllic vision is related to the recognition of limits to growth in a bounded and fragile environment (Section 6.2.2). In order to reach higher levels of sustainability the active involvement of lay citizens and stakeholders plays an important role in developing adapted and accepted policies (Section 6.2.3). One key economic objective in sustainability was the need to diversify the economy and, by so doing, reduce the risks associated with specialisation in a particular sector (Section 6.2.4). Other indications relate to the requirement of improving the quality of the local products rather than their quantity (Section 6.2.5) and the benefits of increasing self-sufficiency (Section 6.2.6). Finally, tourism was seen to be crucial to foster a sustainable economy (Section 6.2.7). This chapter will close with a summary section (Section 6.3) that will show how the points treated in the previous sections are coherent and related to each other.

6.2 Visions for sustainability in islands

As developed in Chapter 2 (Section 2.3), islands present a series of characteristics that make them especially vulnerable (Kelman and Lewis, 2005; Campling, 2006; Guillaumont, 2010) but are also relevant cases in the study of sustainability (Mead, 1976). The relation islanders have with their island (their strong "feeling of belonging" (Soulimant, 2011, p.43)) and the importance of producing policies coherent with the local socio-cultural setting (Péron, 2004) were identified as a keystone in the study of human development on islands. By means of exploring

Flores Island inhabitants and regional stakeholders' points of view, the present research proved to be an opportunity to envision how islanders perceive sustainability challenges in islands. But the research was not initially formulated as a means of gaining a deep understanding of participants' knowledge of the sustainability concept in the scoping interviews and the focus groups; it was (maybe wrongly) assumed that research participants were familiar with the concept of sustainable development. Therefore, no direct question was asked on the understanding of the concept, but the research was an opportunity to examine the research participants' perception of sustainability and the challenges related to it.

It was observable that islanders have a considerable awareness about the fundamental elements of sustainability. One example is the acknowledgement of the requirement of reaching economic, social and environmental sustainability simultaneously. There was an awareness of the need for equilibrium implicit in sustainability:

> "*It is not enough to develop, it is important to assure that there is homogeneity and sustainability of the economic sector, the social factor, the social context, and of the environmental context*"[121] (regional entrepreneurship support service – scoping interview)

The rejection of sector-based scenarios, and a preference for a combination of these scenarios, is also illustrative of this:

> "*Here in the island it cannot be only one of these scenarios* [*PReDSA*]. *It will have to be a development in all of them.*"[122] (local ecology centre team - scoping interview)
>
> "*I think that the model* [the best scenario] *should take advantage of all these ideas, not prioritising one but merging and 'playing'*

[121] "*Não basta apenas desenvolver, é preciso garantir que haja uma certa homogeneidade e sustentabilidade no tecido económico, do factor social, do contexto social, e do contexto ambiental*" (regional entrepreneurship support service – scoping interview [João B.])
[122] "*Aqui na ilha, não poder existir só umo de esses cenários.Vai ter que haver desenvolvimento em eles todos*." (local ecology centre team [Joana L.])

> *with these factors*"[123] (local museum curator - scoping interviews)

This corresponds with the findings made in the LASALA project on LA21 (Evans and Theobald, 2003; Joas and Grönholm, 2004): local decision-makers are conscious of the need for balance between the environment, the society and the economy. Criteria weighting (see Chapter 5: Section 5.4.1.2) also showed that islanders perceive the different issues (groups of criteria) with a similar degree of importance (see Figure 5.10).

In addition to an understanding of the need for equilibrium, increasing local inhabitants' environmental awareness was found to be crucial, therefore implying the requirement for further efforts on specific training for sustainability. These modifications to socio-economic practices should render sustainable practices resilient in the long term. Moreover, increasing the efficiency of human capital is also a way of increasing the efficient use of the limited resources available. The BPOA (UN, 1994) proposes training to improve SIDS' capacity to cope with sustainability's main challenges (from creating the capacity to react against climate change and environmental disasters to science and technology for sustainability). In Flores' case the level of environmental awareness and training are crucial to promote good environmental practices:

> "*People act on the territory. And when they act on the territory it is not to starve, it is to get benefits. And when they get benefits the more intelligent they are, or the more educated or careful… these benefits are… they have better quality.*"[124] (regional rural tourism specialist)

[123] "*Eu penso que o modelo deveria aproveitar todas essas propostas, que não não valorizando um mas conciliando e jogando com todos esses factores.*" (local museum curator [Tiago R. - scoping interview])

[124] "*As pessoas actuam sobre o território. E quando actuam sobre o território não é para morrer a fome, é para tirarem benefícios. E quando começam a tirar benefícios quanto mais inteligentes forem, ou mais preparados ou mais cuidados... esses benefícios são mais... são de qualidade mais alta.*" (regional rural tourism specialist [Daniel A.])

> "*If there is environmental awareness, people can use the environment and nature without damaging it and preserving it.*"[125] (local youth association representative- scoping interview)

As one member of the ecology centre team expressed on the importance of correct policies and judicious implementation, an awareness of the projects undertaken on the island is crucial:

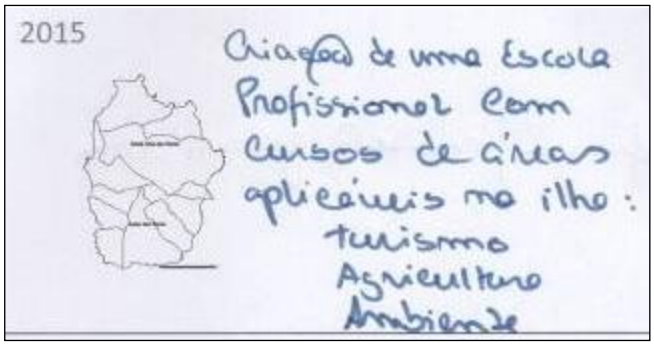
> "*Development is important, if the impact assessment studies are respected and the projects are done with good taste and* [environmental] *awareness, I think that the projects can be well done, but good taste and awareness are very important.*"[126] (ecology centre team)

Moreover, the research participants identified in which fields of activity training for sustainability was a priority. Agriculture and tourism were the two priority fields of action, along with conservation of ecosystems (see for example Figure 6.1). The LA21 in the Isle of Wight also showed that improving training and education by means of a local University College was required in areas of special interest for the island (alternative technologies, sustainable agriculture, coastal management and tourism), therefore confirming a capacity for locals to diagnose their own needs related to sustainability challenges. It is relevant to notice that local communities identified the requirement of improving human capital (with an emphasis on sustainable practices) and that they can diagnose their own specific needs. But due to their small populations small islands have difficulty mustering enough sufficiently trained individuals (UN, 1994); therefore external support remains essential to undertake these projects.

[125] "*Se houver essa sensibilização ambiental, acho que agente consegue utilizar o ambiente e a natureza e não estragando e conseguindo preservar.*" (local youth association representative- scoping interview [Carmen P.])

[126] "*O desenvolvimento é importante, desde que sejam respeitados os estudos de impacto ambiental e as coisas sejam feitas com gosto e com sensibilidade, acho que as coisas saem bem, mas o bom gosto e a sensibilidade é muito importante.*" (local ecology centre member [Jéssica L.])

Figure 6.1: Vocational school and future of the island (local youth association manager - scoping interviews)



"*Creation of a vocational school with modules on fields related to the island: tourism, agriculture and environment.*" (local youth association manager - scoping interviews)

Agenda 21 (Chapter 14.16) considers adequate human resources training key for sustainable agriculture. The need of training for sustainability is relevant to islands' "agroecosystem sustainability" in order to modify unsustainable behaviours (Brown, 1997). Training and efficient human resources' planning are also contemplated in the *European Charter for Sustainable Tourism in Protected Areas* (EUROPARC, 2007) and in the World Commission on Protected Areas report (Eagles *et al*, 2002), testifying to the importance of training locals in sustainable tourism practices and preserving the heritage that makes these areas attractive. Jacobson and Robles (1992) argue the benefits of providing training to guides in national parks: reduction of the environmental impact of tourism activity, environmental education for normally unreached populations, increase of tourist satisfaction through environmental information and increased income to the local population as training allows them to participate more actively in the tourism industry. Therefore training for good practice is clearly a pillar for sustainability in small communities: it contributes to the production of sustainable behaviours (that can be fully assimilated by the local population) while it fosters social justice by empowering individuals that otherwise would lack the required knowledge.

The research has demonstrated that islanders are familiar with sustainability principles, but they admit that improvements are necessary in order to develop good environmental practices among the population. Therefore further efforts in training, awareness raising and education on sustainable practices were identified as relevant.

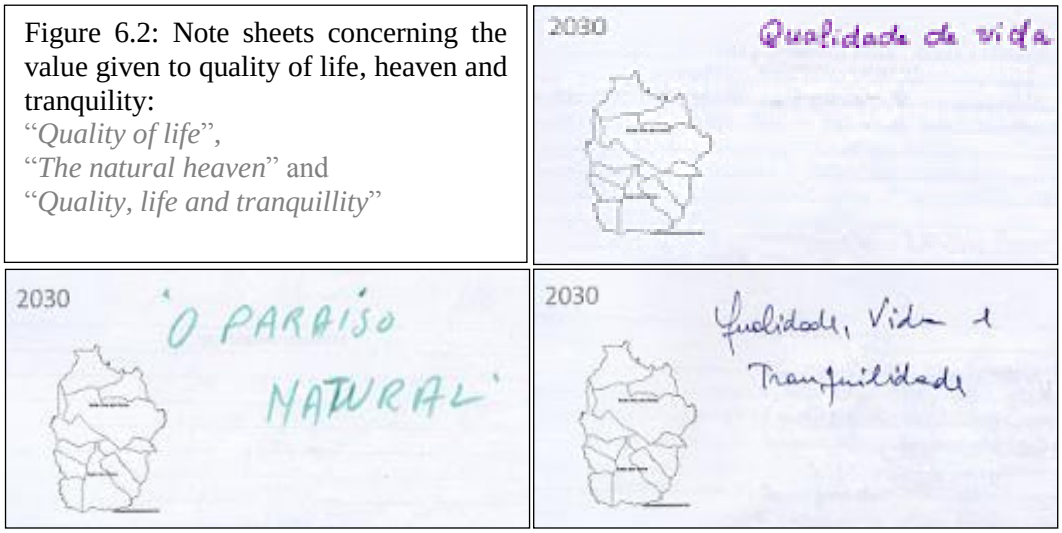
6.2.1 Islands as potential 'heavens' and Utopia

As developed in Chapter 2: Section 2.3.3, islands are very often associated with the ideal of paradise. The present research shows that locals also associate their island with the image of paradise or Utopia. This demonstrates a self-awareness of the island's potential as an ideal place to live; without being self-indulgent but setting it as a positive objective. Research participants expressed their hope that the island could be a 'heaven on Earth'. Indeed, because quality of life is considered already high, it provides a good starting point to reach this objective:

> "*Urban areas were not… were not very changed, and quality of life in terms of air, water, space* [is high]*… and this is the starting point of this community.*"[127] (regional rural tourism specialist)

Natural heritage and quietness were considered to be the keystones of the island's quality of life, but also its main opportunity and strength for development (Figure 6.2). As one lay citizen declared: "*I would like that it* [the Island] *was heaven, it has all the conditions for that*"[128] (craftswoman - FGI).

Figure 6.2: Note sheets concerning the value given to quality of life, heaven and tranquility:
"*Quality of life*",
"*The natural heaven*" and
"*Quality, life and tranquillity*"



[127] "*A paisagem rural, porque não houve grandes desenvolvimentos na agropecuária, está razoavelmente... estável. Os núcleos urbanos não.. não foram muito agitados e a qualidade de vida em termos de.. da ar, da água, espaço... e é esse o ponto de partida daquela comunidade.*" (regional rural tourism specialist [Daniel A.])

[128] "*Gostava de que isto fosse mesmo um paraíso, tem todas as condições para isso.*" [craftswoman - FGI]

Quality of life and the quality of the natural heritage is identified in the Azores as a strength (conf. Chapter 3: Section 3.3.1, Table 3.3). Bragaglia, a local historian, synthesised in a workshop on Sustainable Entrepreneurship (Corvo Island, September 2011) the privileged place the Azores, and other isolated European islands have on the road towards sustainability, as they can benefit from the positive aspects of modernity without having suffered irreversible environmental losses:

> "The Azorean Autonomous Region, without wanting it, is in this beautiful, ideal crossroad between Nature (still original) and the developing technology. I said "without wanting it" because the Azores and especially the Western Group, protected by their geographic isolation, jumped directly from the ancestral agricultural civilization to the first line of the novel post-industrial modernity."
>
> Bragaglia, 2011[129]

Therefore the present situation should allow building intentionally a *better* socio-economic model respectful of the local characteristics where:

> "The members become aware of such ideality and move to intentionally protect it [the unintentional ideal community] or nurture it, thus shifting from an unintentional ideal community to an intentional community."
>
> Miller, 2009, p.34

But this vision was not unanimous, whether some people consider the island already paradisiacal, especially in comparison with industrialised Europe, others presented some conditioning factors. In the economic field, the island is clearly far from being utopian. In one informal conversation with a local restaurant manager I noted one of the most perceptive (and concise) comments on the island's economy: "*Flores is a heaven for living but hell for working*"[130], formal interviewees pointed also to the economy as the island's main handicap. In addition, the smallness of the market drives most young inhabitants to emigrate and it reduces the possibility of successful entrepreneurship ventures.

As presented in Chapter 5, more balanced scenarios were seen to be propitious to reach higher standards of sustainability than sector-based scenarios. They were

[129] Author's translation.
[130] "*Flores é um paraiso para viver mas um inferno para trabalhar*" informal conservation with a local restaurant manager.

also closer to the ideal image for the island. The analysis of the alternative scenarios is an opportunity to reflect if these scenarios are chimerical (misleading and unrealistic) or utopian (aiming at an improvement and, at least to some extent, feasible). From this perspective the multi-criteria appraisal of these scenarios helps to identify unreachable goals or dangerous chimeras. One critique pointed out that more sustainable scenarios could only be possible in the long term and with formidable effort: "*It* [implementing BDS] *might be difficult; it will not be very easy*" (local entrepreneurship support service)[131]. This testifies to local acknowledgement of the challenges inherent in the transition towards a sustainable future, but also on the positive side at least working towards this direction. Therefore, even if the utopian dream is not reached, the efforts made in this sense might be positive in comparison with the initial situation. The uncertainty associated with all the scenarios also reveals the possibility that they might not be fulfilled in their totality:

> "*They can be very ambitious objectives and they might not be reached in the short term. But I do not say that they are not possible in the long term.*"[132] [Santa Cruz das Flores - FGI]
>
> "*It is possible to reach some of these objectives* [BDS]. *Not all of them, not in the short term but… it will be possible to reach some of the objectives.*"[133] [farmers - focus group]

6.2.2 Awareness of the limits to growth and the environmental fragility

Islanders show consciousness about the conditioning factors that limit economic growth and the limitations inherent in its small scale. For instance, one research participant talked about the need to "improve", rather than grow. This qualitative improvement, as opposed to a growth objective, is symptomatic of the need to develop the local economy rather than simply increase the size of the economy. Therefore it implies increasing the "ability to flourish" (Jackson, 2009a, p.16)

[131] "*Tal vez fosse um bocadinho difícil, não vai ser muito fácil*" (local entrepreneurship support service [Maria O.])
[132] "*Porque podem ser objectivos muito ambiciosos e então podem não ser alcançados logo a curto prazo. Mas não quer dizer que a longo prazo não se consiga.*" [Santa Cruz das Flores – FGI]
[133] "*E possível alcançar alguns de esses patamares. Todos não, já se sabe que a curto prazo não mas... mas acho que se vai conseguir alguns.*" [farmers – focus group]

rather than boundless growth. There is a strong understanding that islanders have to deal with a "finite natural ecosystem" (Daly, 1991, p.256) that clearly conditions their capacity for economic growth, but not necessarily their capacity to steer socio-economic activities towards more efficient, prosperous and sustainable standards. As in the Small Islands Voice project, islanders are aware of local sustainability challenges and the necessity to develop an economic model adapted to the limited local resources (Cambers, 2006). Moreover, islands seem to magnify, and render more visible, the conflicts between economic development and the requirement of preserving the environment (Depraetere, 2008) (conf. Chapter 2: Section 2.3.3), therefore it can be said that some of this environmental awareness is due to the local experience and that it is innate to island communities.

It was acknowledged that local business ventures could be viable in the long term even if extreme wealth creation was not to be expected. Some stakeholders considered that the wealth creation criterion, related to the island's economic potential, is never going to be high; considering the size of the economy, people would never make huge fortunes (this criterion was therefore not always linked with a high weighting, see Chapter 5: Section 5.4.1.2, and Appendix 14). The guest house manager and the regional tourist specialist stated in the scoping interview that wealth creation was limited but sufficient to live on the island. Rapid wealth creation cannot be expected on small islands, therefore business ventures need to adapt to these conditioning factors, and they should integrate them in their business culture:

> "*In the long term, all the investments are possible here. All of them. There is one condition, because they* [the investments] *are for the medium and long term, the individual* [the entrepreneur] *must like to live here, you do not come here only to make business. One person that likes living here can live well, even*

with a small and seasonal market."[134] (local guest house manager - scoping interview)

"*None of the businesses undertaken in Flores will make you millionaire. They are all non-intensive, but people can live with them.*"[135] (regional rural tourism specialist - scoping interview)

The regional government identifies the fragility of the ecosystems as one of the region's weaknesses (conf. Table 3.4). In addition to the limited size of the island (small internal market and limited potential for growth) it was also clear that there was a consciousness of the environmental risks associated with intensive activities:

"*There are here* [SDS] *some points that imply the intensive exploitation of some resources that can produce there* [Flores Island] *some unbalance.*"[136] (regional entrepreneurship support service)

Increased cattle farming activity is an example of a clear environmental threat. For instance, the ecology centre team considered that less intensive farming practices aiming at quality products were preferable, and the manager of the regional environmental service observed that intensifying the primary sector could destroy part of the natural heritage and, consequently, tourist attractiveness could be negatively affected:

"*Here* [SDS] *it says to intensify the primary sector. But I think that it is better for the island to increase the quality of the products.*"[137] (ecology centre team)

"*When the primary sector is intensified the risk of destroying part of the natural heritage exists. And some types of tourism*

[134] "*A longo prazo tudos os investimentos acho que são viáveis aqui. Todos. Tem uma condição essencial nisto, exactamente por serem a médio, longo prazo, tem que se gostar viver aqui, não se vem aquí só para fazer negócio. Uma pessoa que gosta viver aqui, pode conseguir viver bem, mesmo com um mercado rarefacto e sazonal só.*" (local guest house manager [Luca J. - scoping interview])

[135] "*Nenhum dos negócios que se fazem nas Flores é para ficar milionário. Todos eles são negócios de baixa intensidade, mas pode-se viver.*" (regional rural tourism specialist [Daniel A. - scoping interview])

[136] "*Há aqui algumas questões que implicam o uso intensivo de alguns recursos o que depois poderia provocar ali* [Ilha das Flores] *uns certos desequilibrios.*"[136] (regional entrepreneurship support service [João B.])

[137] "*Diz aqui no sector primário mais intensivo. Mas eu acho que era melhor, para a ilha das Flores se apostássemos num sector primário com mais qualidade.*" (ecology centre team [Jéssica L.])

> *can be… some sectors can be affected. I think that for tourism there is not a great added value.*"[138] (regional manager of natural areas conservation service)

And, while local traditional fishing techniques are considered sustainable, it was apparent that there is an awareness of the limits of these local resources:

> "*About the fisheries, we have to be really careful again because it is a really soft balance. What I mean by this is that it is a fragile ecosystem. You have to be really really careful.*" (regional entrepreneurship support service - scoping interviews)
>
> "*The problem is that the sea is huge, but the island finishes* [continental shelf] *and it is not so good for fishing, it is deep very fast* [abyssal plain]. […] *The resources are limited.*"[139] (national nature conservation association)

These contributions show that an awareness of the need to preserve the local environment is effectively present in small island populations and that islanders are sensitive to the threats involved in intensive human socio-economic activity. This confirms Putz's intuition of islanders being in the vanguard of environmental consciousness: due to their experience of living in a confined space, islanders have a closer understanding of the risks linked to the excesses of human economic activity. Therefore islands can effectively be seen as small "spaceship earth(s)" (Boulding, 1966) that provide us with the conditions to reflect in microcosm on global sustainability challenges and their relation with the public.

6.2.3 Role of public participation and local authorities

Public participation is considered key in the transition to sustainability (e.g. Agenda 21 or the Aarhus Convention) and in satisfactory nature preservation initiatives (Harrison *et al*, 1998). It can be linked to the existence of social capital because it is a form of social interaction. In the literature review social capital

[138] "*Ao intensificar o sector primário, poderá haver o tal risco de... de.. destruir alguma parte do património natural e há algum tipo de turismo que ficará um pouco... sectores que ficaram um pouco afectados por isso. Pronto... acho que haveria, em termos turísticos, não vejo aqui uma grande mais valia.*" (regional manager of natural areas conservation service [Armando F.])

[139] "*O problema é que o mar é enorme mas a ilha acaba e aquilo não foi assim um sítio de pesca, aquilo é logo para o fundo.* […] *Os recursos são limitados.*" (national nature conservation association [Ricardo W.])

(conf. Chapter 2: Section 2.2.2.2) is considered to be potentially positive for the sustainable development of a community (Ritchey-Vance, 1996; Bebbington, 1997; Beem, 1999; Agyeman and Angus, 2003; Curtis, 2003; Rydin and Holman, 2004; Tsai, 2008). Public participation is an opportunity to inform policies with local knowledge of an area while increasing local acceptance of a project (conf. Chapter 2: Section 2.4.1). In the case of individual islands in an archipelago this seems even more relevant as each island has its own characteristics and needs (conf. Chapter 2: Section 2.3.1), therefore policies in islands should adopt "appropriate socio-cultural plans" (Péron, 2004, p.338). Kotlok observes that islanders themselves claim that they are the only ones who know their needs (conf. Chapter 2: Section 2.3.3). This local demand for public participation and involvement to develop adapted strategies was observed in the present research where it was directly related with the island's future sustainability: sustainable development will only be possible if the community undertakes combined efforts in the same direction. This involves local acceptance of a project for a sustainable island but it also implies that the entire community behaves in concert, as unsustainable behaviours can negatively affect the entire project, and because in small populations efforts need to be combined and coordinated to avoid ineffective situations:

> "*This is a homework that must be done to…* […] *scenarios are all beautiful, if in 2030 the population is involved, even if instead of 4000 people we are 2000, more involved in the project, I think that Flores will be sustainable.*"[140] (local restaurant manager)
>
> "*Involving locals, and not only, people related to the different fields, try to understand… the different ways of thinking and try to reach a consensus on which is the best goal to reach.*"[141] (regional manager of natural areas conservation service)

[140] "*Por isso esse é um trabalho de casa que tem que ser feito para que...* [...] *os cenários são todos bonitos se em 2030 a população se envolver, mesmo que em vez de ser uns 4000 mas sejamos 2000 mas envolvidos de facto no projecto estou em creer que as Flores têm sustentabilidade.*" (local restaurant manager [João-Alberto K.])

[141] "*Envolvendo as próprias populações, pessoas exteriores às populações, pessoas que estão ligadas à gestão das áreas, tentar aperceber... a maneira de pensar dos diferentes sectores e tentar em conjunto chegar a um consenso e ao melhor rumo para o desenvolvimento de um determinado local.*" (regional manager of natural areas conservation service [Armando F.])

This argument is coherent with Haughton's view of sustainable regeneration: "where local engagement is limited, too often even admirable attempts to create community infrastructure have seen neglect set in once core funding is taken away" (1998, p.874). But it is relevant to observe that efforts should be undertaken to achieve greater representativeness of the community in participatory processes:

> "*Here* [in the Azores] *people are not very… especially in Flores, people do not protest, they do not have this tradition, public participation is very low.*"[142] (local freelance consultant - scoping interview)

This was critical in the deficiencies observed in local decision-making (mainly explained by the lack of cohesion between the two councils) of which a negative consequence is the loss of autonomy: because consensus is barely reached, external authorities (the regional government) have to take key decisions with the perverse consequence of having an inadequate knowledge of the place. Therefore in the case of an island in an archipelago, effective local decision-making is required to avoid uninformed 'top-to-base decision-making' by external decision-makers. Indeed the price paid in small islands for unsatisfactory local decision-making is high: decisions are delayed locally due to an initial lack of consensus, this forces external intervention in the decisions that produce unfunded policies that do not correspond with local needs. In fact, regional decision-making has traditionally been carried out considering the more inhabited islands, disadvantaging smaller and less populated islands:

> "*Themselves* [local politicians] *alone don't… don't agree with each other. It is very difficult that they agree. And because they do not agree, they rely on external decisions and normally external decisions are not thought because…* […] *non-locals* [decision-makers] *hardly know the island… and they give any opinion.*"[143] (regional rural tourism specialist)

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[142] "*Aqui as pessoas são pouco, na ilhas das Flores em particular, são pouco reivindicativas, não há muito essa tradição de reivindicação, a participação pública é muito pequena*" (local freelance consultant [Isabel S. – scoping interview])

[143] "*Porque eles sozinhos não.. não se entendem. Pronto, é muito difícil entender-se. E como não se entendem, ficam sujeitos a decisões exteriores e normalmente as decisões exteriores não são*

> "*So* [Flores] *depends on general regional directives. And these are wide, they are made thinking on the bigger islands which are São Miguel, Terceira and eventually Faial. Thus, islands such as Flores, Corvo, Graciosa, São Jorge and Santa Maria, are not included in these general lines.*"[144] (regional rural tourism specialist)

The consequence of this is a negative dynamic of indifference and disappointment among the local population (towards local decision-makers that fail in their duties and external decision-makers who do not take account of their requirements). This leads to a lack of trust in the political system as the inhabitants are used to inconsistent decision-making: "*Maybe due to isolation, because of* [politicians'] *broken promises, they do not trust the system. And finally they become indifferent*"[145] (local restaurant manager). This lack of confidence handicaps the development of social capital: institutional projects for the community might face rejection and social interactions might suffer from this feeling of distrust. Therefore, there is a contradiction between the potential benefits of active involvement of the local population in participative processes for sustainability, and a general feeling of disenchantment that conventional decision-making provokes among the population.

6.2.4 Economic diversification

As a consequence of their desire to make the best of their competitive advantage and potential economies of scale, islands have a tendency towards specialisation. But economic models based on one activity are threatened by potential crises in their sector of specialisation (Grydehoj, 2011). Conscious of the region and the island's fragile situation of the *cow-monoculture* (see Chapter 3), research

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pensadas porque... como eles não se entendem, não dão opinião, as pessoas que vêm de fora, conhecem mal a ilha e... e dão uma qualquer." (regional rural tourism specialist [Daniel A.])

[144] "*Por tanto* [Flores] *é dependente das directivas regionais que são vastas. E são vastas, e são feitas para pensar sobre tudo nos grandes territórios que é Sao Miguel, Terceira e eventualmente Faial. Por tanto, ilhas como Flores, Corvo, Graciosa, Sao Jorge e Santa Maria, ficam sempre à margem dessas grandes linhas.*" (regional rural tourism specialist [Daniel A.])

[145] "*Porque tal vez devido ao isolamento, devido a prometer e não comprirem, desacreditaram no sistema, não acreditam no sistema. E acabaram por: deixa la.*" [João Alberto K. - scoping interviews]

participants identified economic diversification as a key strategy to increase economic resilience in the long term:

> "*It is important to diversify, it is important to get ready for the end of the subsidies or the economic basis of the 'cow'.*"[146] (national nature conservation association)

Focusing economic activity in only one sector was seen as hazardous, whereas diversifying economic activity seemed a more prudent option. But this diversification remains an important challenge in small islands (Briguglio, 1995). The following comments are clear statements about this need for economic diversification:

> "*I think that Flores and the Azores in general must diversify their... their economy, because it is always a problem to depend on one sector which has a lot of weight, because any crisis, any difficulty in this sector makes everything else more difficult. We must diversify.*"[147] (local museum curator - scoping interview)
>
> "*It is already complicated to diversify an island such as São Miguel… here on Flores it is even harder, but if these people do not diversify, if they are not ready, they will rely totally on the exterior.*"[148] (national nature conservation association)

This objective of diversification echoes Haughton's (1999) self-reliant city and its requirement for diversity: "cities need to emulate this [natural] complexity by fostering environmental, social and economic diversity, avoiding social and economic monocultures as much as environmental ones" (p.237). Economic diversification is also related to increasing an island's self-sufficiency (see Section 6.2.6) and the creation of a diverse labour market, creating local employment and, in the long term, creating the conditions to fight depopulation:

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[146] "*E preciso diversificar e, é preciso estar preparados para quando parar essa dependência dos suplementos ou da base económica na vaca.*" (national nature conservation association [Ricardo W.])

[147] "*Eu penso que as Flores e os Açores em geral devem diversificar as suas... a sua econômia, porque é sempre um problema estar dependente de um sector que tenha uma grande importância, porque qualquer crise que haja, qualquer dificuldade que haja nesse sector depois é muito mais dificil. Nos temos que ir pela diversificação.*" (local museum curator [Tiago R.])

[148] "*E... pronto, se é complicado já numa ilha maior como São Miguel diversificar muito... aqui nas Flores ainda mais complicado, essas pessoas não diversificarem, se não estiverem preparadas vão depender completamente do exterior.*" (national nature conservation association [Ricardo W.])

> "*When we talk about reducing the dependency towards the exterior this supposes to foster a lot of fields that are actually under-developed. So it* [to reduce dependency] *supposes more diversified workforce, I think that it creates wealth, especially employment creation.*"[149] (local freelance consultant)

Therefore instead of fostering specialisation in one sector, small islands should improve core competencies that can be adapted to different fields of activity. These core competencies consist of abilities and characteristics that can be common and transferred to different areas of activity (Grydehoj, 2011). One example might be the capacity to produce goods and services of outstanding quality that could find recognition in national and international markets.

6.2.5 Quality vs quantity

Due to the limited productive space available on islands, potential economies of scale are limited (Chapter 17.G of Agenda 21; Briguglio, 1995; Campling, 2006). On top of that, producers face higher export costs than mainland competitors (Briguglio, 1995; Read, 2001; Campling, 2006). Quality should be aimed at increasing the economic viability of the diversified production. Such quality products (mainly agriculture, fishery and handicrafts) and services (tourism) should be more profitable than mass-produced products. This has the effect of rendering their exports economically viable as their higher price can cover part of the costs related to their transport:

> "*But mostly with quality, in any field with quality. In agricultural products, if we produce quality products, if we export them, our products should be more expensive because they are quality products. Our tourism has high quality, it should be better paid. Less* [quantity] *is profitable.*"[150] (ecology centre team)

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[149] *"Quando se fala de reduzir a dependência com o exterior implica valorizar, muitas áreas que neste momento estão sub-exploradas exploradas e por tanto, implica necessidade de mais mão de obra e mais diversificada, eu acho que enriquece, justamente o nível da criação de emprego."* (local freelance consultant)

[150] "*E sobre todo com qualidade, em qualquer uma das áreas com qualidade. No caso dos produtos mesmo agrícolas, se nós tivemos produtos com qualidade, se nós exportamos para o*

"*A better product, more demanded, the price could be superior to the market.*"[151] (restaurant manager)

The regional agricultural strategy follows the European Commission directives on good practices[152]. The benefits for European outermost regions of increasing the quality of the products have already been identified by the European Commission that highlights their role in these regions' economic development:

> "The originality and quality of the agricultural produce grown in the OR [outermost regions] deserve wider recognition. Indeed, the economic development of the OR is also supported by exports of products that are much in demand for their quality and unique characteristics: for instance, AOC rum from Martinique, the Victoria pineapple from Réunion or the Caribbean melon, Madeira wine, cheese and tea from the Azores, AOC wines and cheeses from the Canary Islands or flowers and ornamental plants from all of the OR"
>
> COM, 2008, p.9

Locals acknowledge the potential role that international institutions can play; it was pointed out that the new EU Common Agricultural Policy can be an opportunity to improve the quality of products' and to limit agricultural intensification:

"*We must take advantage of these subsidies and improve the products, increase their quality.*"[153] (regional manager of agriculture services - scoping interview)

"*It must be a sustainable agriculture, not intensive agriculture, and the European policies of quotas have helped for that.*"[154] (local ecology centre team - scoping interview)

Certification plays a central role in this strategy as it guarantees the quality and the origin of the products; differentiating them from other products in the region.

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exterior, os nosso produtos em princípio deveriam ser mais bem pagos porque são produtos de qualidade. No caso de turismo que nós temos, é um turismo de qualidade também deveria ser mais bem pago. Menos e lucrativo." (ecology centre team [Joana L.])

[151] "*Um produto de maior qualidade, mais procurado, os preços tal vez possam ser um bocadinho acima do que se faz, porque o mercado*." (local restaurant manager [João-Alberto K.])

[152] Available at: http://www.azores.gov.pt/Portal/en/entidades/sraf-draca/textoImagem/agro-environmental+measures.htm

[153] "*Há que aproveitar essas ajudas e melhorar os productos, aumentar a qualidade dos productos*" [Raul H.]

[154] "*Tem de ser uma agricultura sustentável, não uma agricultura de massas e isso até agora a política europeia tem ajudado porque há regime de quotas e não pode esceder*" (local ecology centre team [Joana L. - scoping interview])

Indeed potential purchasers "*like certified arguments*"[155] (regional rural tourism specialist). For instance, using the UNESCO Biosphere Reserve declaration as a commercial argument is considered to be of particular relevance in this strategy:

> "*I think that the Biosphere Reserve trademark can be an important added value. It will add value to the products.*"[156]
> (regional manager of natural areas conservation service)

As shown above, quality is seen as an opportunity to reduce the impact of agriculture on the local ecosystem, to increase the value of these goods, and to target exclusive niche markets outside the island as the added value compensates for the additional transport costs attributable to extreme/hyper insularity.

6.2.6 Self-sufficiency

The self-sufficiency objective on islands can be related to a 'localist' perspective of community economic development: "the emphasis is often on building a stronger, more *localized* economy by building community-owned alternatives to the mainstream market" (Haughton, 1998, p.875). Cambers (2006) observes that islanders have a tendency to rely on themselves to solve their problems. In the present project, aiming at self-sufficiency was considered key to increasing local sustainability by means of reducing the island's dependency on other territories' supplies and financial support. Energetic self-sufficiency was pointed out as essential, but also trying to reduce the dependency towards some consumer goods (mainly alimentary).

Locally produced renewable energy self-sufficiency is vital in the sustainable development of small islands that lack fossil fuel resources and must import them from great distances (Kristoferson *et al*, 1985; Monteiro Alves, *et al*, 2000; Weisser, 2004; Duic *et al*, 2008) (conf. Chapter 2: Section 2.3.1.2)**.** Islands are, however, identified as potentially good places to develop renewable energy schemes (Monteiro Alves, *et al*, 2000). But energy self-sufficiency does not mean

[155] "*Porque as pessoas gostam muito de argumentos certificados.*" (regional rural tourism specialist [Daniel A.])
[156] "*E acho que a questão da marca da RdB pode ser uma mais valia muito grande. No sentido da valorização dos produtos.*" (regional manager of natural areas conservation service [Armando F.])

energy autonomy, indeed dependency on the maintenance of infrastructure is hardly avoidable (Soulimant, 2011), technical options that enable local solutions should therefore be favoured. In the present research the strategic importance of renewable energy was a frequent argument. It can be a solution to the global energy crisis, and crucial overall for sustainability in the long term:

> "*If we have clean energy* [renewable energy]*... in a context of global conflict affecting the price of fossil fuels, I think that in the future it will benefit everybody.*"[157] (Council representative)
>
> "*People can understand that energetic management is one of the most important things for sustainability in the long-term.*"[158] (regional entrepreneurship support service)

In the case of Flores, almost 50% of the electricity used is produced from renewable sources (wind and water) (Chapter 3), as one research participant commented: "*There are already signals. There are already projects*"[159] (regional entrepreneurship support service). In fact, energy self-sufficiency can be targeted; the MIT Portugal Green Islands project is currently working towards this objective (Chapter 3). Green energy and energy self-sufficiency were also identified as a potential flagship for tourism. Visitors would value the fact that they are visiting a clean and self-sufficient island:

> "*It is an added value; it is an added value for all the people that visit the island, for the tourist who says: 'look, on this island they produce 50% of clean energy!"*"[160] (Council representative)

Food supply is the other sector where islands need to increase their self-sufficiency while avoiding specialisation in a single product or activity (e.g. *cow-monoculture*) which is usually strongly dependant on European subsidies. The

[157] "*A partir do momento em que se gere energias.. limpas... e num contexto de conflito mundial, a cerca do preço dos combustíveis, penso que no futuro que isso vai beneficiar a toda a gente.*" (Council representative [António N.])
[158] "*As pessoas podem se aperceber que a gestão energética é uma das questão mais importantes para a sustentabilidade, de longo prazo.*" (regional entrepreneurship support services [João B.])
[159] "*Já há alguns sinais. Já há alguns projectos a serem desenvolvidos.*" (regional entrepreneurship support service [João B.])
[160] "*E uma mais valia, é uma mais valia para toda a gente que nós visita, para o turista, diz: 'olha, nesta terra produze-se produze-se mais de 50% de energia limpa!'*" (Council representative [António N.])

European Commission acknowledges the importance of increasing alimentary self-sufficiency and local agriculture in the outermost regions to reduce dependency:

> "This external dependency is translated into a strong vulnerability towards supply and echoes the importance of preserving local agriculture to contribute to one of the priority objectives which is alimentary self-sufficiency. Agriculture is also a strategic sector because of its multi-functional characteristics that should be preserved."
>
> European Commission, 2009, p.27

Additionally, the UN considers that organic agriculture plays a potential key role in increasing small island self-sufficiency as it helps make them less dependent on external supplies required in conventional and more industrialised agricultural techniques (UN, 2004), therefore this modality of agriculture is also an opportunity to gain logistic autonomy. This objective of self-sufficiency has already been identified in the case of other islands; for example, the LA21 case in the Isle of Wight points out the role increasing local self-sufficiency has in the stimulation of the local economy and increased autonomy towards the main market suppliers. Islanders acknowledged that developing a local market was also a project to reduce imports which are subsidised; therefore reducing food imports is an opportunity to increase the island's financial sustainability and autonomy:

> "*We are going to reduce regional or national public subsidies. We will try to reduce it while we foster the local system* [economy]*; try to understand that the products sold in Flores* [imported] *might not be as good as the ones produced there* [locally]."[161] (regional manager of nature conservation association - scoping interview)

But islanders themselves recognise that these projects remain challenging for small local communities that lack the human capital to modify existing buying

[161] "*Quando tenho discussões com essas pessoas que estão com essas propostas do despovoamento elas dizem: 'ah mas essas ilhas não tem salvação, que é que nos vamos a fazer?' Vamos regressar à sustentavilidade, vamos fazer com que seja menor o financiamento público, regional, ou nacional. Mas vamos, tentar amenizar este tipo de financiamento dinamizando propiamente o sistema local, tentar perceber que se calhar há coisas à venda nas Flores que não são tão boas como coisas que se podem vender lá, producidas lá.*" (regional manager of nature conservation association [Jaime D. - scoping interview])

behaviours in a successful way or to organise an effective local market, therefore the efforts in training and education pointed out in Section 6.2 make the sense here. More trained and aware individuals will be able to take better and sustainable advantage of the available resources while diversifying production:

> "*It is almost impossible that the few people that remain on the island do something to make it more self-sufficient.* […] *It is important to start changing mentalities.*"[162] (Council representative)
>
> "*The problem is that people are not organised. Now they start, we begin to have more… some people have orchards, but…* […]. *But maybe it is not enough organised to answer to the demand.*"[163] (Santa Cruz das Flores - FGI)

6.2.7 Tourism

The vision concerning the preferences for the tourism sector was clearly compatible with eco/nature tourism; indeed the mass tourism model was rejected. One of the benefits associated with more sustainable modalities of tourism was the capacity it has to foster local economy diversification and to support locally produced goods. But for this to succeed local stakeholders should nurture the characteristics that make the island unique. Finally, research participants identified the requirement of having a tourism sector that can also benefit the local population, increasing their quality of life.

Although the research participants defended the need to increase economic diversity it also seemed clear that tourism is indeed a key sector in small island economies (conf. Chapter 2: Section 2.3.1.3). One of the arguments in its defence was that it is one sector that involves the development of other fields of activity (such as agriculture, transport or infrastructure); therefore tourism seems to

[162] "*De aí, para os poucos que estamos cá, a trabalhar a fazer algo para que a Ilha das Flores fique mais sustentável, ou auto-sustentável, é uma tarefa quase imposível, não é? Não digo que seja todo imposível mas é muito dificil. Era preciso para já mudar, mudar de mentalidade.*" (Council representative [António N.])

[163] "*O problema é que as pessoas não se organizam nesse sentido. Agora começam, já começam a haver mais… uma pessoa ou outra que tem hortaliças, mas...* [...]. *E tal vez não seja com a organização necessária para dar resposta a mais pessoas*." [Santa Cruz das Flores - FGI]

support economic diversification. For instance, LA21 in Calvià (Spain) was focused on finding solutions to recover from the negative impact of mass tourism and it was resolved into a series of actions that influenced other sectors: conservation of the natural and cultural heritage, improvement of public transport, water, energy and waste management, local governance, increasing the quality of life of the local population, rehabilitation of urban areas, and diversification of the economy (Royles, 2009). Ecotourism can foster economic development and diversification from a sustainable perspective and, in addition to this, it tends to be locally owned, therefore most of the benefits remain in the community (Slinger-Friedman, 2009). Tourism is seen as a sector that influences other economic activities through increased demand for goods and services, producing important multiplier effects in the local economy: "*tourism is one of the sectors with higher transversal relations in the market*"[164] (regional rural tourism specialist). For instance, ecotourism and rural tourism was considered by participants as an opportunity for the handicrafts industry as rural tourists are interested in local traditions and they purchase these goods, producing wealth while promoting the local culture:

> "*Generally the rural tourists* [...] *are individuals that value traditions... and this contributes to the development of handicraft.*"[165] (local entrepreneurship support service)

But for ecotourism to succeed entrepreneurs must be aware and convinced of the attractiveness and uniqueness of the place (culture and nature heritage and geographical situation); therefore they should aim at exploring it but also at preserving it. The tourism sector should tend towards eco/nature-tourism modalities, and it should 'feed' these singularities, therefore developing the image of the island around these concepts (a similar conclusion is proposed in Cusick's study of ecotourism in East Maui, Hawai'i (2009)). As the manager of the regional nature conservation organisation proposed:

[164] "*O turismo é dos sectores com maior nível de relações transversais no mercado*" (regional rural tourism specialist [Daniel A.])
[165] "*Geralmente o turista que vem para o turismo rural* [...] *sao pessoas que também dao muito valor as tradicoes... também isso contribui para o desenvolvimento artesanal*" (local entrepreneurship support service [Maria O.])

> "*'The last sunset in Europe', it must yield a profit. It is beautiful.* […] *It should not be mass tourism and it must be a very particular tourism. A very particular tourism… it must continue to be a remote destination: remoteness as identity. I think that it is very important, even to give an image of limited accessibility.* […] *To appeal the sense of adventure, not as a physical activity but as discovery, but a discovery more… maybe, a rather remote and spiritual destination.*"[166] (regional manager of nature conservation association - scoping interview)

It has been proved that nature-based tourism and ecotourism can provide revenues to support local development and natural area conservation (Goodwin, 1995; Gössling, 1999; Balmford *et al*, 2009, conf. Chapter 2: Section 2.3.1.3). At international (IUCN, 2002) and at European (EUROPARC, 2007) level there have already been efforts made with the aim of fostering and regulating tourism in protected areas. But, as Scheyvens (1999) stresses, local communities should be empowered in order to benefit from ecotourism activities; this empowerment is also relevant to sustain the activity in the long term, increasing its positive impact. Appropriate ecotourism activities require institutions with good planning capacity, integrating local expectations, involving the private sector, the population and participants in a project for economic, social and environmental sustainability (Koens *et al*, 2009). Planning should help to minimise the negative effects of tourism activities. Indeed, ecotourism success, economically profitable but also environmentally and socially sustainable, is conditioned by the specific implementation of such a strategy:

> "The way in which ecotourism is approached is critical to its success in terms of promoting the well being of both local peoples and their environments."
>
> Scheyvens, 1999, p.246

[166] "*O último pôr do sol da Europa, tem que ser rentabilizado. E é bonito.* [...] *Há um turismo não massificado aquí e tem que ser um turismo muito própio. Um turismo muito própio... tem que se continuar o aspecto do destino remoto: o remoto como identidade. Eu penso que isso é muito importante, até dar uma certa ideia de pouca accesibilidade.* [...] *Captivar mais a aventura, não tanto a aventura como actividade física e de descoberta, sim da descoberta mas uma descoberta mais... um destino mais remoto e espiritual, tal vez.*" (regional manager of nature conservation association [Jaime D. - scoping interview])

Stakeholders linked local quality of life with the creation of infrastructure for tourism. As the local manager of the entrepreneurship support service stressed:

> "*While developing the structures for tourism, they are creating better conditions and better quality of life for local population; I think that both are related.*"[167] (local entrepreneurship support service)

This relation comprises the creation of an infrastructure that benefits locals (airport, port and health service upgrades) but also, for instance, the correct use of natural resources (Jacobson and Robles, 1992).

6.3 Summary

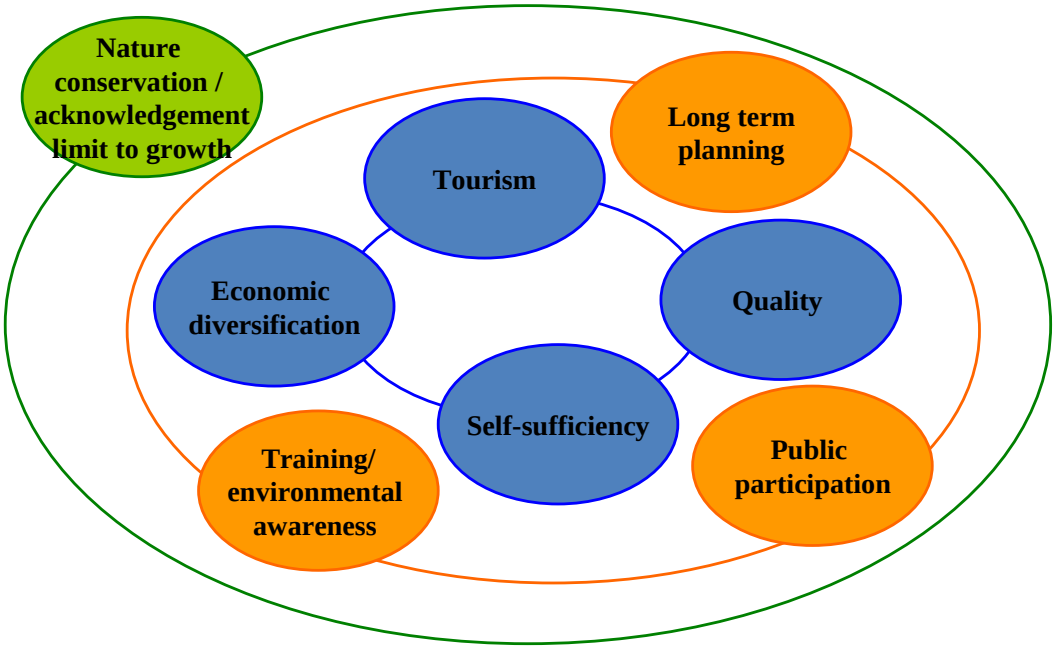
This case study has shown the role that islands can play in the understanding of sustainability issues and solutions (Depraetere, 2008). The participative foresight scenario mapping methodology gave voice to islanders, creating the conditions for them to reflect on sustainability in small islands. Figure 6.3 schematises the relations between the different points treated in the chapter. The figure demonstrates how economic and socio-cultural aspects are embedded within the environmental limits inherent to the island, a local environment in which conservation is a condition for socio-economic development.

The local and regional research participants showed an awareness of sustainability challenges: the need to determine the conditions to develop an active and efficient economic system that would allow fighting depopulation while respecting and preserving the socio-cultural characteristics unique to the place and respecting the environmental heritage, a pillar of the island's life support systems (water and food supplies and biodiversity) but also key in its quality of life and attractiveness. Some of these findings are directly related with eco-island concept (conf. Chapter 2: Section 2.3.1.1): "sustainable use of natural resources, prosperous and stable

[167] "*Ao criar condições para o turismo, estão a criar condições e melhor qualidade de vida para a população local, eu acho que uma coisa tem a ver com a outra.*" (local entrepreneurship support services [Maria O.])

eco-economy […], and widespread ecological awareness" (Huang *et al*, 2008, p.587).

Figure 6.3: Findings for sustainability
in small islands



In addition to general concepts concerning sustainability, islanders identified concrete needs key in the transition to a desired future. One of these points is the role that ecotourism plays as an economic engine able to activate other sectors of the economy while valuing and preserving the local environment and culture. Linked to tourism were the requirements to develop a more diversified economy that would avoid the trap of a dominant productive sector (such as *cow-monoculture*). In addition, in order to create a more resilient economic system a key strategy would also be to promote, when feasible, self-sufficiency. Increase of material autonomy was seen as one way to protect the local economy from external shocks and to reduce its dependency on regional, national and international support. Finally, as a way to support a healthy economy, research participants declared their preference for quality products that would be niche oriented and associated with extensive production systems, rather than leading to mass or intensified production systems. This specialisation would, for instance, compensate for higher transport costs that render economically unviable the

export of undifferentiated mass-produced goods. A similar analysis was done for tourism: in small islands a few tourists with high purchasing power are preferable to masses of visitors who would not produce so much wealth and where the environmental impact would be higher.

These four main strategies can be applied in other small islands or small territories that might not have access to efficient transport systems or the capability to develop economies of scale. But in order to enable these transitions it transpired that wider social objectives should be undertaken. First, there was a need to foster the active participation of the small population as a means of promoting coherent individual actions that would not jeopardise the main strategies for sustainability, but also concentrate the efforts of the available human capital to reach the same main objectives. But this human capital requires training in defined sectors relevant to the place from the perspective of sustainability. This informed and aware population should participate in the elaboration of the required long-term planning to enable the society to steer itself towards a more sustainable and resilient socio-economic model. Therefore there was recognition that policy making should be undertaken with a long time horizon.

Finally, and supporting all the points treated above, there is the requirement to preserve the natural heritage; islanders are knowledgeable about the limited capacity of the local environment. This is in part due to the sense of limited space. Therefore islanders have the possibility of observing, on a small scale, the effects of their own actions but also of learning from other cases. Also because the alternatives are limited, islanders show more willingness to preserve what makes them unique.

Chapter 7:
Conclusion

Old stairs in the trail to Fajã de Lopo Vaz.

7 Conclusion

7.1 Introduction

The main aim of this thesis was to investigate how individual islands can define their transition to sustainability and what their preferences for sustainable development are. In doing so it addresses two main aims (conf. Chapter 3: Section 3.6). The first aim was to inform the sustainable development of a small island by means of foresight scenarios developed and appraised in a participative way. And the second, to adapt a multi-criteria appraisal method within a participative process to create a novel participative methodology; critically apply the methodology and contribute to debates on participatory planning and appraisal of foresight scenarios for sustainable development. Thus, the main contributions of this research are the collection and analysis of islanders' perspectives on sustainability (conf. Chapter 6), and the development of a novel approach to explore potential alternative foresight scenarios which can inform local and regional decision-making about the transition to sustainability (conf. Chapters 4 and 5). Moreover this thesis proposes a new perspective on how decision-making in the context of small archipelagic islands should be understood and undertaken. Decision-making processes should be inclusive and multi-disciplinary in essence in order to produce policies for the integrative management of small islands. Local specificities and preferences should be listened to and prioritized, and, in addition to this, potential risks and uncertainties must be assessed. Public participation is crucial in all the steps as it provides unique information, but it is also essential to develop projects genuinely owned and implemented by local stakeholders. The multi-criteria appraisal is also a participative tool enabling a critical review of the alternative scenarios in order to understand their real sustainability and to identify the potential risks.

The methodology, participative foresight scenario mapping, enabled the incorporation of multiple perspectives (conf. Chapter 5: Section 5.1.1) and the

systematic and multi-disciplinary appraisal of potential futures (conf. Chapter 5: Section 5.4.1). Convergence of opinions was observed among the research participants (conf. Chapter 5: Sections 5.3.2 and 5.4) which suggests the existence of ground for consensus. Islanders (regional and local research participants) proved to be aware of local sustainability challenges, they showed a capacity to diagnose these challenges, and they could provide information on local strategies for sustainability (conf. Chapter 6: Section 6.2). The uncertainty observed in the appraisal might be a reflection of islands' inherent vulnerability which demonstrates the importance of the context in using MCM (conf. Chapter 5: Section 5.4.1.1). The model that emerged from the research (Figure 6.3) is dominated by islanders' acknowledgement of the limits to growth imposed by the island's geographic boundaries and the requirement to preserve the local environment which is considered essential to local wellbeing. Therefore the research identifies a high degree of environmental awareness among islanders, and it confirms the vision of islands as (real size) models of a bigger "spaceship earth" (Boulding, 1966). Because of the geographic situation dominated by maritime boundaries, islanders seem to be better placed to understand the limits of the Earth (Putz, 1984).

Conclusions on the methodology are drawn in Section 7.2. The implementation of the methodology provided the opportunity to understand how the local community envisions the future and local sustainability issues, but it also produced an understanding that can inspire small island communities to confront their own sustainability challenges (Section 7.3). A series of recommendations to improve the methodology are proposed in Section 7.4, one of these recommendations is the potential benefits derived from a stronger emphasis put into the final workshop. Finally, this thesis concludes with a series of reflections about the integrative study of islands (Section 7.5).

7.2 Scenario development and appraisal

Participative foresight scenario mapping was designed and applied to answer to the challenge of informing policies for small communities' sustainable futures. The research informs new strategies to deal with such questions. The findings concern the procedural/methodological implications of the methodology, and the capacity it has to involve the population. The assessment of the participative dimension has been crucial in the present research (Section 7.2.1). The case study also provided an opportunity to identify the benefits and limitations of the appraisal methodology (Section 7.2.2). Moreover, the issues relating to uncertainty and to the expertise of the research participants dealing with such holistic scenarios, emerged as key findings in the research (this point is relevant to future research into participative decision-making for sustainability) (Section 7.2.3).

7.2.1 Participative reach of the methodology

Decision-making for sustainability requires the participation of multiple sectors of society; the present research provided the opportunity to develop a methodology that enables the integration of multiple perspectives. The methodology answered the challenge made by Gamper and Turcanu (2007) to increase general public participation in multi-criteria appraisal projects, and it was congruous with the requirements of including locals in decision-making for sustainability (UNCED, 1992; Harrison et al, 1998; Agyeman and Angus, 2002; Wells and McShane, 2004). The present project was innovative as it was the first time that this variety of participants/interviewees have successfully been involved in a MCM process to analyse holistic non-technical scenarios (Stirling, 1997; Stirling and Mayer, 1999; Stirling and Mayer, 2000; Yearley, 2001; Stirling and Mayer, 2001; Mayer and Stirling, 2002; Davies et al, 2003; Horlick-Jones et al, 2004; McDowall and Eames, 2006; McDowall and Eames, 2007; Stirling et al, 2007; Eames and McDowall, 2010). In the present research it was initially considered that local and regional perspectives were complementary and necessary: decision-making for an island in an archipelago must be coherent with regional policies. However, the

uniqueness of each island and local perspectives must be taken into consideration; otherwise projects might not be effectively applied and strategies, however good they may be, can fail. Policies should capture the essence of local identity (Péron, 2004 in Chapter 2: Section 2.3.3) in order to assure local acceptance. Local inhabitants were therefore asked to participate in order to provide locally-sourced information and their unique perspective on the island (local tacit knowledge), but also to make the outcome of the research theirs (assuring their acceptance, which is a more instrumental objective) (Stirling, 2006). The participative dimension of a project depends on the number and the variety of participants but also on how their contributions are treated. In this perspective the use of non-technical narrative foresight scenarios proved to be of great interest in the inclusion and the combination of such variety of points of view.

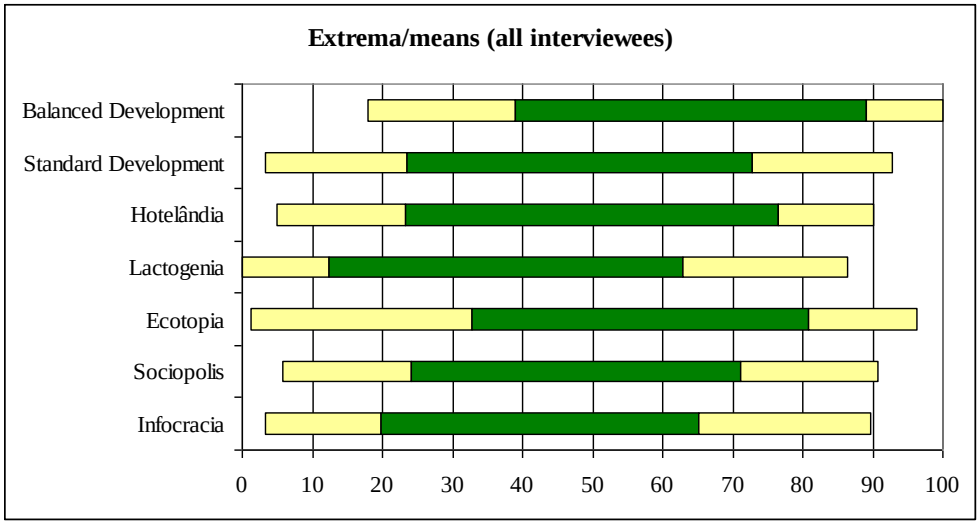
7.2.2 Foresight scenario development and appraisal: methods and limitations

The scoping interviews and the focus groups provided the opportunity to identify the interviewees' perspectives on future development. Independently of the contributions gathered in the research (conf. Chapter 5: Section 5.2.1) emphasis on the long-term perspective and the integrative nature of the scenarios prevented of some of the limitations that have handicapped some LA21 processes (conf. Chapter 2: Section: 2.2.1.2). This might be the opportunity to improve how decision-making for long-term community projects is undertaken. Policies and projects can involve complex technologies and decisions that imply a high level of technical knowledge. But the methodology involves the development of non-technical scenarios that constitute narrative versions of potential futures which can be understood and appraised by a large proportion of the community. Moreover the preferred scenarios can become vehicles for a stronger statement of local preferences. Ideally such preferences should be respected when technical decisions are taken; therefore they should help to define models of development followed by the different socio-political and socio-economic stratums.

The scenarios developed for the purpose of the research proved to be useful tools in the appraisal phase as their narrative was accessible to all the participants even if they involved more technical issues (conf. Chapter 5: Section 5.2.1). This point is consistent with the principle of environmental justice which presupposes the inclusion of all social groupings (Agyeman et al, 2002; Agyeman and Evans, 2004; EPA, 2013). Moreover the foresight scenarios proved to be adaptable to a systematic multi-criteria appraisal (conf. Chapter 5: Section 5.4.1). The technique used to develop the scenarios was researcher-led, but this did not handicap the appraisal stage. There was general acceptance about how the scenarios were built, and research participants agreed that they were plausible (conf. Chapter 4: Section 4.2.3.2). Further, the foresight scenarios also proposed negative perspectives ('green and white elephants'), increasing realism (conf. Chapter 5: Section 5.2.1.2). Overall, the scenarios developed for the purpose of the research were positively valued because they offered genuine holistic and multi-disciplinary visions, providing realistic potential futures. This holistic approach can be improved and adapted to other projects.

In the present research the MCM method was useful to appraise holistic and non-technical scenarios against multiple criteria (conf. Chapter 4: Sections 4.2.2 and 4.2.5.3, and Chapter 5: Section 5.2.1). In addition to this, the graphs, produced with the MC-Mapper and the MCM Analysis software (Stirling and Champion, 2009a and 2009c), were helpful tools to support the analysis and the illustrative disclosure of the results among participants and lay population. The perspective groupings (Chapter 5: Section 5.4.2) enabled by the software showed a convergence of points of view, a point which is treated in Section 7.3.2. The methodology created the conditions to appraise the scenarios in depth both quantitatively and qualitatively. The quantitative appraisal structured the MCM interviews but this information was insufficient without the interviewees' elucidations which proved to be more categorical than the quantitative appraisal itself (conf. Chapter 5: Section 5.4.1). The overall chart (Figure 7.1, same as Figure 5.6) synthesises how the scenarios performed and the uncertainty associated with them. This high uncertainty (commented on in the next section) was one of the limitations of the appraisal.

Figure 7.1: Extreme (yellow) and average (green) weighted scoring for all participants. X-axis indicated low to high performance.



7.2.3 Uncertainty and expertise

One of the characteristics of the MCM method is that it shows the uncertainty associated with the scenarios (Stirling, 1997). This aims at exploring optimistic and pessimistic situations, giving an opportunity to identify potential weaknesses and threats (conf. Chapter 2: Section 2.4.1.5). The uncertainty that arose in this appraisal exercise did not allow the identification of a definitively best scenario: the score overlapping with the other scenarios bears witness to its limitations. Some reasons for this uncertainty are directly related to the study of foresight scenarios (intrinsic risks, time horizon and exogenous factors), but others suggest some limitations of this appraisal method in the context of this research (complexity of the scenarios and limited expertise in all the fields of the appraisal) (conf. Chapter 5: Section 5.4.1.1). In addition to this, there were doubts as to how the scenarios could be implemented: a scenario can be preferred but if the implementation is not correctly undertaken the result can be negative. In summary, the success of a scenario does not depend solely on the scenario itself, but also on how the policies and projects that make it possible are put into practice (conf. Chapter 5: Section 5.4.1.1). Therefore the question is whether the appraisal method is useful to inform decision-making in the context of holistic non-technical scenarios.

To answer this question special attention has to be paid to the qualitative data gathered in the interviews. Indeed, this information facilitates an understanding of how the interviewees were scoring and what the origins of their doubts on the performance of the scenarios were. Paradoxically, the explanations and the arguments given by the interviewees pointed out more clearly to *a priori* the most sustainable option as 'the' option (conf. Chapter 5: Section 5.4.1). The fact is that the qualitative and the quantitative appraisals are complementary. The systematic quantitative analysis strengthens the interview process, and it is a useful tool to aggregate the visions and disseminate the outcomes of the appraisal in a straightforward, visual and transparent way. But also, via the criteria, it is an opportunity to make the interviewees aware of lay citizens' main concerns (conf. Chapter 4: Section 4.2.2).

The present research has shown that holistic scenarios challenge the capacity of appraisal. In these situations the difference between expert and lay knowledge-holders is often inconsistent, challenging this conventional differentiation and supporting ideas on the benefits of listening and empowering the so-called lay stakeholders/citizens (conf. Chapter 5: Section 5.4.1.1). Dominant specialisation in our societies can be a burden when trying to understand general scenarios, but this can be overcome if communication and the feedback mechanisms of reflexive governance are working properly in the community (conf. Chapter 2: Section 2.2.2). In the transition to sustainability the desired future/scenario must work constantly as a reference, and decision-makers and stakeholders must weigh their decisions against it and share their specialised points of view. This way, social networks can catalyse specialised knowledge and they can work as referees able to reorient public and private projects and assure their convergence with the scenario (institutional bodies might also play this role). Moreover, the projects should be decided and designed considering the scenario as a reference. This way the characteristics in the genesis of the specific projects are congruent with the general vision, reducing the risks of negative deviations. Participative foresight scenario mapping helps to identify which scenarios and criteria involve higher uncertainty. Therefore it brings also the opportunity to address the issues to the

concerned stakeholders, and to define with them strategies or correct practices that should reduce the incurred risks.

The question of the closing-down or opening-up of the debate about the alternative scenarios needs to be asked. Closing-down would have meant pointing to an undeniable best scenario. The scenarios that tend towards, or are closer to, strong sustainable development score better than the other scenarios for the majority of the interviewees; this informs and reinforces the preferences on which typology of development should be followed. But as noted above, doubts, materialised by high uncertainty, remained. One of the conclusions of this thesis is that the scenarios cannot be seen as fixed models but rather as locally informed indications of a desired future. They inform a typology of development in a more specific way than broad notions such as sustainable development, which is indeed only a "guiding notion" (Loorbach, 2007, p.2) (conf. Chapter 2: Section 2.2.1), but they remain flexible enough to adapt to unexpected changes. Therefore the debate remains open as to what constitutes the success of a specific scenario but closed about the typology of development. In that sense, learning more about local preferences for sustainability are valuable, especially in the context of small islands (Section 7.3).

7.3 Understanding sustainability in islands

7.3.1 Characteristics of small island communities

The literature on small islands discusses their characteristics and main challenges (Armstrong and Read, 2002; Rietbergen et al, 2007) (Chapter 2: Section 2.3.1). Sustainability is seen as a cultural concern (Nurse, 2006) (conf. Chapter 2: Section 2.2.3), and in the case of small islands, one crucial cultural factor is the particular community setting and its relationship to the place (Péron, 2004) (conf. Chapter 2: Section 2.3.3). This aspect is not unique for small islands but it is especially relevant in policy making processes, and the implementation of the resulting policies in these geographic contexts. Geographic isolation and remoteness

explain why islands have an important rate of natural endemism (Francisco-Ortega et al, 2000; Stattersfield and Capper, 2000) but they also explain islands' cultural heritage; each island (even in an archipelagic region) develops its own particular identity. As McCall (1996) points out "islanders are particularistic" (p.76), this characteristic must be transcribed in the policies in order to make them acceptable to the population (Péron, 2004). In archipelagic regions this diversity of identities increases the difficulty of decision-making. But it is also a potential opportunity for sustainability as natural and cultural uniqueness can be combined locally to promote sustainable practices among locals. One consequence for decision-making is the requirement to actively involve the community in these processes. The previous section developed how the participative foresight scenario mapping methodology meets this requirement.

As discussed in Chapter 2 (Section 2.2.2.2) social capital (Putnam, 1993a) can play a crucial role in increasing projects' and policies' effectiveness. For instance, the sustainability of islands is strongly related to the efficient management of the potential conflicts of interest over the different uses of coastal areas, therefore the need for integrated coastal zone management is considered to be crucial (Calado et al, 2007) (conf. Chapter 2: Section 2.3.1.1), in this case it is easy to understand the benefits that can be derived from strong social capital. But the characteristics of island societies can undermine social capital dynamism producing a negative impact. Therefore there are two contradictory forces: one is the potentially positive role that a small closed community, shared identity and productive social capital, can play in the transition to sustainability, easing information sharing, cooperation and strengthening a community project. The other is that the situation might not be so favourable due to an aversion to change, and a certain lack of entrepreneurial dynamism which can produce stagnation in small island communities (conf. Chapter 6: Section 6.2.3). In this context participative processes are of great relevance in the definition of a project really shared and owned by the community.

The challenge is then to increase awareness of sustainability matters and encourage the population to recognise and to value their uniqueness by means of

genuine local projects. The strengths are that, as already mentioned above, islanders are often strongly related to their island, and the communities are small in size, rendering it possible to involve concerned stakeholders in participative processes. The present research showed the feasibility and the acceptance these participative processes can have (conf. Chapter 5: Section 5.1.1), and it was an opportunity to gain some relevant insights into the requirements of sustainability in islands which are now summarised.

7.3.2 Contributions to sustainability in islands

From McCall's (1994) perspective on the role of Nissology, participative foresight scenario mapping methodology succeeds in assessing the multidimensional study of small islands: the methodology proposes the required depth (treat an array of subjects), width (inform the public sphere) and height (inform decision-makers) (conf. Chapter 2: Section 2.3.3). Moreover, the knowledge gained from this case-study has the potential to inform other small island cases, especially for islands in hyper-insularity (Taglioni, 2011) (conf. Chapter 2: Section 2.3.2.1). But, because each community is unique and the combination of geographic factors varies from one case to another, this knowledge needs to be contextualised and local communities should adapt the lessons from this case study to their specific situation. Another point to consider is that the assessment of sustainability was not often done from a specialised perspective due to the difficulty, or even impossibility, individual respondents had to show proficiency in all the points treated in the appraisal (Section 7.2.3 and Chapter 5: Section 5.4.1.1).

The project has demonstrated that the models of development tending towards strong sustainability are preferred and considered to be feasible. The fact that there was a convergence of opinions among the different groups of participants (conf. Chapter 5: Sections 5.3.2 and 5.4.2) is a strong signal about islanders' preferences. Their level of concern about the requirement to increase sustainability standards and the importance given to local natural heritage preservation was noticeable and it confirms Cambers' (2006) intuition on

islanders' awareness and their capacity to produce an accurate diagnosis of their island's limitations to growth (conf. Chapter 2: Section: 2.3.3). The confirmation of these ideas supports clearly the benefits and the relevance of public participation in these contexts.

The areas of main concern identified to improve island sustainability (conf. Chapter 6: Section 6.2) are: economic diversification, the need to increase the quality of the goods and services produced on the island (rather than their quantity), the potential benefits of increasing overall self-sufficiency (alimentary and energetic), and, as a cross-cutting sector, sustainable tourism practices that avoid intensification (local sectors such as agriculture, fishing and trade could benefit from a sustainable tourism sector). The different elements of this model work in combination and their cohesion is crucial for local sustainability. Moreover the feasibility of the preferred scenarios and the points of view on local preferences developed in the present research can be corroborated with existing and future research in the field of sustainable development in small islands (especially for more technical issues). Although these ideas are of great interest for small islands with touristic potential, it is clear that this model can serve as a guide line for other localities.

7.4 Recommendations for possible improvements of the methodology

Participative foresight scenario mapping proved to be successful as an adapted appraisal methodology to develop and inform multi-disciplinary holistic scenarios (conf. Chapter 5). But the case study provided the opportunity to define potential improvements of the methodology. This concerns four points: increase the involvement of lay citizens in the appraisal, reduce the length of the multi-criteria appraisal interview (reducing the number of scenarios but maintaining the number of criteria), improve the process of criteria selection (additional group meetings, referred in Chapter 4: Section 4.2.2), and the requirement to give a greater importance to the final dissemination workshop in future applications of the

methodology (including it in the methodology to increase its deliberative dimension, rather than just being a mere dissemination event).

The methodology was innovative in having the criteria selected by lay citizens (conf. Chapter 5: Section 5.3). But it can be improved to involve lay citizens more actively in the multi-criteria appraisal step. They could appraise, in groups or individually, the scenarios, using computer-based techniques or not (deliberative mapping methodology already engaged focus groups in an MCM appraisal but not in its computer-based version, conf. Chapter 2: Section 2.4.1.4). Alternatively, the criteria weighting could also be undertaken by lay citizens. By this means lay concerns would be more decisive in the appraisal as their concerns would influence the final outcome of the appraisal more deeply, which would also enhance the information-sharing dimension of the process.

A more procedural consideration is that the appraisal should have included fewer scenarios to help produce a more thoughtful and fine quantitative appraisal. The scoping interviews revealed that sector-based scenarios were not realistic options, but they were, however, used in the multi-criteria appraisal to increase its depth (by including some themes and extreme situations that were not treated in the holistic non-technical scenarios) (conf. Chapter 5: Section 5.4). The experience showed that it would have been more useful to have them as discretionary; leaving the interviewees the freedom to assess or discard them. Efforts should be made to understand why the interviewees chose to exclude the scenarios; this should be informative enough to understand their point of view on the discarded scenarios. Moreover, focusing on fewer scenarios would help make the appraisal more thoughtful, increasing the time for reflection on a preferred list of options, and, as a consequence, it could produce a more elucidating quantitative assessment (in the present thesis the quantitative appraisal could not help pointing out a definitive best option, conf. Chapter 5: Section 5.4.1). Another option could have been to reduce the number of criteria but the consequence of this would have been to impoverish the appraisal; in a study on holistic scenarios a wide range and variety of criteria is preferable.

Moreover, further efforts should be undertaken in the future to use criteria directly proposed by lay citizens instead of having them selected from an initial institutional list, producing genuine criteria and assuring a direct communication of local concerns. But a direct 'base-to-top' criteria proposal requires training and preparing lay knowledge-holders. This would have involved the focus group participants in a two-stage process, one dedicated to the foresight scenarios and another on the identification of criteria (this meeting would have consisted of an induction course and the proposal of criteria) (conf. Chapter 4: Section 4.2.2).

The research blog (Appendix 4 and research blog: http://floresvisoesdefuturo.blogspot.co.uk/) was a positive complementary tool to disseminate information but it was also found to be inappropriate to support a wider discussion forum as individuals did not use it as a means to comment on the outcomes of the research or to provide new contributions. From that perspective, participative foresight scenarios mapping methodology is a good starting point but to really support the transition to sustainability it should be extended over a longer term. The next step could consist of enlarging the degree of participation and involving other stakeholders and lay citizens who do not usually take part in such projects. In doing so, it is critical to find powerful and adequate catalysts to foster lay citizens' involvement.

The final dissemination workshop (conf. Chapter 4: Section 4.3 and Appendix 16) was decided once the research project was already underway. It is fair to consider that if the event had been integrated into the methodology from the beginning the project could have gained an additional deliberative dimension. The final workshop would also have presented the opportunity to produce additional scientific contributions on the relevance of the methodology and to the debate on sustainability on islands. Considering these ideas a final workshop gathering the research participants, decision-makers and the general public should be seen as an opportunity to become a keystone for the community. The event should be thought of as the opportunity to define more specifically the base for a local agenda for sustainability. The ideas expressed at this public event could become a strong statement for the community. But this would not have a political value

without the active participation and acceptance of local and regional decision-makers that should adapt policies following these preferences and, if relevant, create new policies.

7.5 Afterword

The present research has shown that islanders are aware and sensitive to the existence of global and local sustainability challenges, and has set the conditions to identify present and future threats and opportunities. The review of the literature (conf. Chapter 2: Section 2.3.1) and the present research have shown that small islands are serious candidates to be at the forefront of the transition to sustainability, and, due to their inherent vulnerabilities, island societies could be the first and main beneficiaries of modifying their "community's knowledge codebooks" (Holden, 2008, p.20) in this direction. From this perspective, the proposed methodology succeeds by enabling the local and regional assessment of these risks in a systematic way, but also by providing propitious conditions to inform sustainability in the context of holistic scenarios. The study of islands can therefore greatly benefit from this methodology that enables considering small islands in their integrity while including in the process islands' cultural particularities. The methodology should also be useful to inform decision-making in other cases (for example small isolated communities in land-locked territories or small municipalities willing to inform the transition towards sustainable development). The characteristics of small islands should ease individuals' adoption of pro-environmental ways of life. This methodology can therefore become the vehicle by which local identity can be simultaneously considered and respected but also rethought and reflected on within the scope of sustainability. As developed in the previous section a stronger role given to a more ambitious final workshop could provide the opportunity to gather more voices and to involve even more sectors of the society in local transition for sustainability.

As Stratford (2008, conf. Chapter 2: Section 2.3.1.1) observed, islanders have a tendency to value and protect their island but decision-makers often give more

importance to economic objectives and these tend to lead to socially or environmentally unsustainable situations. This research might not influence policy making directly, but by valuing the scenarios targeting strong sustainable development standards more positively (for economic, social and environmental criteria), islanders showed a preference for pro-environmental options. The multi-criteria appraisal provided an opportunity to demonstrate that these preferences, illustrated by foresight scenarios, were considered to be realistic in social, economic and environmental domains, and therefore worthy of consideration by decision-makers.

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Appendices

Corvo Island from Flores Island.

Appendices

1 - RESEARCH ETHICS:

Brunel Business School
Research Ethics Form

To be completed for all Undergraduate and Postgraduate projects

PLEASE INDICATE BY A TICK WHICH ONE OF THE FOLLOWING CATEGORIES YOUR RESEARCH FALLS WITHIN:

1. Human Participant Research X
   Does your research primary data collection directly from humans, for example, through the use of interviews or a questionnaire?

If you tick this box, you will need to prepare a Research Consent Form. Prepare your form using the template provided (Page 5). You do NOT need a consent form if participants: (a) are NOT in one of the categories specified in point 7 of the Guidelines; and (b) are anonymised (i.e. their identities cannot be traced (see point 8 in the Guidelines)).

2. Research using Human Participant data bases ☐
   This is research where you are using information stored on a database which could be traced back to individuals or groups, such as personnel records

You will need a consent form as above.

3. Organisational Research not requiring human participants or participant-based data bases ☐
   This is research where you may be using information in the public domain and which could not be traced directly to individuals or groups, such as company records, research based on academic literature only, or other types of secondary data.

You will NOT need consent if you cannot trace the owners of your intended data.

Please indicate if your research *also* falls into this category

4. Company Information requiring a Non-Disclosure Form ☐

   For use in organisations which require that your dissertation/ project can only be used for assessment purposes, and that the content cannot be released for a fixed period of time. This is sometimes requested if the information is sensitive commercially, or in terms of the reputation of the organisation.

Produce your own version of page 3. Please seek advice from your supervisor.

Name of Student: José Benedicto Royuela **Student Number:** 0733692 **Student E-mail:** Jose.Benedicto@brunel.ac.uk
Degree Course Title: PHD
Module Number and Title: n/a
Name of Supervisor: MALCOLM EAMES
Title of Research Project: FLORES ISLAND, PATHWAYS TO SUSTAINABILITY
Please view the podcasts (a) Student Briefing: Research Ethics, and (b) Student

Briefing: Research Ethics Clearance Application Process
(http://people.brunel.ac.uk/~bustcce/Ethics/**)**

Read and understood the Brunel University Research Ethics code
(http://intranet.brunel.ac.uk/registry/minutes/researchethics/CoEv6.pdf)

Short Project Description (150 words)

TRANSITIONS' EXPLORATION IS ONE OF THE PILLARS OF SUSTAINABILITY RESEARCH. THESE STUDIES AIM AT ANALYSING HOW SOCIO-ECONOMIC STRUCTURES ARE OR COULD BE MODIFIED WITH THE OBJECTIVE OF REACHING HIGHER SUSTAINABILITY STANDARDS. AS THESE TRANSITIONS REQUIRE CONSENSUS AND MULTI-DISCIPLINARY KNOWLEDGE AT A SCIENTIFIC AND TECHNICAL LEVEL, PARTICIPATIVE METHODOLOGIES, SUCH AS MULTI-CRITERIA APPRAISAL, HAVE BEEN DEVELOPED IN ORDER TO GET A WIDER PERSPECTIVE AND A HIGHER SOCIAL APPROVAL.

THE RESEARCH WILL CONSIST OF A PROCESS OF INTERVIEWS AND FOCUS GROUP DISCUSSIONS WITH LOCAL CITIZENS AND EXPERT STAKEHOLDERS. IT WILL ALLOW AN EXPLORATION OF THEIR VISIONS OF SUSTAINABLE FLORES ISLAND; THE STARTING POINT WILL BE REGIONAL REPORTS ON SUSTAINABILITY PERSPECTIVES. THE SCENARIOS PRESENTED IN THIS REPORT WILL PERMIT STARTING A REFLECTION PROCESS AND FINALLY GETTING A BETTER IMAGE FOR THIS SPECIFIC CASE'S POTENTIALS. THIS FORESIGHT WILL BE AN OPPORTUNITY TO SUPPORT TRANSITIONS FOR A SUSTAINABLE FLORES ISLAND.

Specific Risk Factors Involved. You should consider the following and select those areas that are a potential risk factor for your research:

(a) Unnecessary disclosure of interviewee identity
(b) Security of storage of data
(c) Company confidentiality
(d) Copyright infringement
(e) Coercion of interviewees into interviewing
(f) Are there any others you would add? YES/ NO

If Yes (please specify)

A- Unnecessary disclosure of interviewee identity

E- Coercion of interviewees into interviewing

Is a Non Disclosure Agreement required by the organisation being researched
NO

(if YES), please complete a version of the Form on page 3

Student Declaration

I have viewed the podcasts on (a) research ethics and (b) the research ethics clearance application process	*YES*
I have read through and understood the Brunel University Code of Ethics	*YES*
*I have provided a Research Consent Letter, **if required** (page 5)*	*YES*

*I have provided a Non Disclosure Form, **if required** (page 3)*	*NO*
I declare that the above is true and any approval will be given based on my answers and project description provided in this form.	
Date: **20 January 2009**	
Supervisor declaration	
I confirm that the student: *José Benedicto Royuela*	
Has confirmed to me that s/he has viewed the research ethics podcasts	YES
Has correctly identified the type of research to be undertaken	YES
Has confirmed to me that s/he has read the Brunel University Code of Ethics	YES
Has provided a Research Consent Letter, ***if required*** (page 5)	YES
Has completed a Non-Disclosure Form***, if required*** (page 3)	n/a
For Supervisor: If the ethics form is missing, incomplete or does not meet the Guidelines, the PG Dissertation/UG Project Proposal is *referred*. The Supervisor may indicate revisions needed as part of her/his written feedback.	

Please note that (a) one example of any transcripts/completed questionnaires; (b) a blank copy of the interview questions/questionnaire; and (c) Information Sheet you used must be bound into your final submission. ALL of your transcripts and interview questions MUST be retained by you until you have received formal confirmation of your degree award.

Please note that your supervisor has the right NOT to provide research ethics clearance if you have not completed the process and/ or the forms satisfactorily.

If there are any substantial queries that cannot be dealt with by your supervisor, please contact the Brunel Business School Research Ethics Committee.

Brunel Business School
Research Ethics

Participant Information Sheet

Specialised stakeholders

(Scoping and Multi-criteria appraisal Interviews)

Research: FLORES ISLAND, PATHWAYS TO SUSTAINABILITY

Researcher: JOSE BENEDICTO ROYUELA, Student on PHD
Institution: BRUNEL UNIVERSITY
School: Brunel Business School
Research centre: BRESE, Brunel Research in Enterprise, Innovation, Sustainability and Ethics
Contact: Jose.Benedicto@brunel.ac.uk

Purpose of the research:
The research proposes to implement participative processes where stakeholders and local population will have the possibility of reflecting about the future development options of Flores Island. This will be an opportunity to improve these methodologies and to explore pathways to sustainability.

What is involved for the stakeholder? :
As a stakeholder you will be asked to participate in two phases of the process.
At first you will individually be interviewed in order to scope the study. This first participation is crucial as you will actively work settling a basic frame that will help developing specific scenarios for Flores islands. Afterwards local population will consider these scenarios and will enrich them with their contributions. This phase do not implicates stakeholders' participation; it will consist on focus groups interviews to local population.
Finally stakeholders, in the multi-criteria appraisal interviews, will appraise the scenarios. They will be asked to appraise *PReDSA*'s scenarios and the scenarios developed in the previous steps of the present research.

Scoping and multi-criteria appraisal interviews will have each a maximum length of three hours each. One year lapse of time is going to happen between scoping and multi-criteria appraisal interviews.

Participation implication and confidentiality policy:
Participation in this research project is voluntary. As a specialised stakeholder you do not represent the company, institution or organisation where you work. You will

be asked to give your specialised personal opinion about the themes in study; your participation will not compromise your employer entity.
The results of the study are going to be published in the thesis and scientific papers; they might also be disclosed in scientific congresses. We guarantee that your personal information is not going to be published. In these publications, and the research material, you will only be identified as a specialised stakeholder in your specific field, and if you accept we will name your employer entity.

Participant consent:
After having read and understood the Participant Information Sheet, please sign the consent form.

Brunel Business School
Research Ethics

Participant Information Sheet

Local population

(Focus groups interviews)

Research: FLORES ISLAND, PATHWAYS TO SUSTAINABILITY

Researcher: JOSE BENEDICTO ROYUELA, Student on PHD
Institution: BRUNEL UNIVERSITY
School: Brunel Business School
Research centre: BRESE, Brunel Research in Enterprise, Innovation, Sustainability and Ethics
Contact: Jose.Benedicto@brunel.ac.uk

Purpose of the research:
The research proposes to implement participative processes where stakeholders and local population will have the possibility of reflecting about the future development options of Flores Island. This will be an opportunity to improve these methodologies and to explore pathways to sustainability.

What is involved for the participant in the focus groups interviews? :
You will be asked to participate in one group meeting. The meeting, maximum four hours, will consist on reflecting on scenarios previously developed from interviews to specialised stakeholders. Groups will be composed of six to eight participants.

Participation implication and confidentiality policy:
Participation in this research project is voluntary.
Participants' identity is going to be preserved and the published materials will not include information that could identify you, unless you explicitly consent it and we find it relevant for the study. Otherwise you will only be identified as a component of the focus group you will have participated.
The results of the project will be published in the final thesis and scientific papers; they might also be disclosed in scientific congresses. You will not be named in any publication with your explicit consent.

Participant consent:
After having read and understood the Participant Information Sheet, please sign the Consent Form.

RESEARCH CONSENT
Specialised stakeholders

Research: FLORES ISLAND, PATHWAYS TO SUSTAINABILITY

Researcher: JOSE BENEDICTO ROYUELA, Student on PHD
Institution: BRUNEL UNIVERSITY
School: Brunel Business School
Research centre: BRESE, Brunel Research in Enterprise, Innovation, Sustainability and Ethics
Contact: Jose.Benedicto@brunel.ac.uk

Many thanks for agreeing to participate in my research project about exploring pathways to sustainability in Flores Island.

This research proposes to implement participative processes where stakeholders and local population will have the possibility of reflecting about the future of Flores Island. This will be an opportunity to improve these consultation methodologies and to explore pathways to sustainability.

As informed in the Participant Information Sheet you will participate in scoping and multi-criteria appraisal interviews. There you will reflect on your personal perspectives for Flores Island future and the appraisal of a series of scenarios. Your signature below serves to signify that you agree to participate in this study.
Your participation is voluntary and you can choose to decline to answer any question or even to withdraw at any point from the project. The information will be reported in such a way as to make direct association with you impossible. In the publications you will only be identified as a specialist in your field. With your consent your employer identity will also be named.
Confidentiality also means that the background information produced during the meeting will be coded and stored in such a way as to make it impossible to identify them directly with any individual (e.g. they will be organized by number rather than by name).

Consent:
I accept my employer to be cited in the publications from the research

YES ____ NO_____

I have read the above information and the Participant Information Sheet and I agree to participate in this study

(please tick)_____

Participant's signature: _____
Place: _____
Date: _____

RESEARCH CONSENT
Local population

Research: FLORES ISLAND, PATHWAYS TO SUSTAINABILITY

Researcher: JOSE BENEDICTO ROYUELA, Student on PHD
Institution: BRUNEL UNIVERSITY
School: Brunel Business School
Research centre: BRESE Brunel Research in Enterprise, Innovation, Sustainability and Ethics
Contact: Jose.Benedicto@brunel.ac.uk

Many thanks for agreeing to participate in my research project about pathways to sustainability in Flores Island.

This research proposes to implement participative processes where stakeholders and local population will have the possibility of reflecting about the future of Flores Island. This will be an opportunity to improve these consultation methodologies and to explore pathways to sustainability.

As informed in the Participant Information Sheet you will participate in focus group interviews where you will be asked to reflect about scenarios concerning possible future developments for Flores Island. Your signature below serves to signify that you agree to participate in this study.
Your participation is voluntary and you can choose to decline to answer any question or even to withdraw at any point from the project. Anything you say will only be attributed to you with your permission: if not, the information will be reported in such a way as to make direct association with yourself impossible. In that case in the publications you will only be identified as an inhabitant of the island that participated in a specific focus group.
Confidentiality also means that the background information produced during the meeting will be coded and stored in such a way as to make it impossible to identify them directly with any individual (e.g. they will be organized by number rather than by name).

Consent:
I accept to be identified in the report YES ____ NO_____

I have read the above information and the Participant Information Sheet and I agree to participate in this study

(please tick)_____

Participant's signature: _____
Place: _____
Date: _____

2 - ENQUIRIES TO PARTICIPANTS:

Focus group participant enquiry

The focus groups were designed to permit lay citizens to have their say on decision makers' and stakeholders' visions for the Island (previously interviewed in scoping interviews in April 2009). The first part of the interview was aiming at reflecting on previously proposed projects. This group exercise helped you to be familiar with some projects for the island. It was also an opportunity for you to map them in a two axis graph following you opinions on the projects importance/level of agreement and your perspective on their feasibility. This activity was also aiming at helping you to detect projects that could be implemented in the island at a private level.

Once you got familiar with these projects you had to develop two different scenarios for the island. These scenarios were the combination of the different stakeholders' and decision makers' visions. They were developed following the *PReDSA*'s style but much more focused on Flores Island.

This short enquiry is an opportunity to have feed back from you on the process you have been through, knowing how has been this experience for you and how it filled its objectives.

Once again thank you very much for having participated in this project.

Enquiry:

- Has this meeting being an opportunity for you to learn something on the perspectives of development for the island? □ Yes □ No
- What will you retain?

- If you had the opportunity, would you participate in more public participation projects on the Island development? □ Yes □ No
- Which projects seem especially interesting for you?

- Do you think that using scenarios to reflect on Flores Island future is useful to decide which policies and projects are the most adapted to the island? □ Yes □ No

  Why?

- Have you changed your opinion on Flores Island potential? □ Yes □ No

  In which fields?

- Have you changed you opinion on how should the regional and local government promote the activity in the island? □ Yes □ No

  In which fields?

- Would you start one of these projects? □ Yes □ No

  Why?

M.C. Mapping participant enquiry

The M.C. Mapping appraisal interview that you have just been through was an opportunity to reflect on possible scenarios or development pathways for Flores. That appraisal was done on criteria previously proposed by focus group interviews participants. The research project objective is to create an interviews process where are, in a participative and reflexive fashion, developed visions for Flores Island future. Been that an opportunity for knowledge sharing between the Island population and stakeholders (and decision makers), the information followed the circuit: stakeholder-population-stakeholder-population.
This short enquiry is an opportunity of knowing your opinion on the totality of the process, knowing how has been this experience for you and if it met its objectives.

Once again thank you very much for having participated in this project.

Enquiry:

- Do you think interesting to develop this type of scenarios for a particular island? □ Yes □ No
  Why?

- Do you consider correct the way the two scenarios were developed and presented? □ Yes □ No
  What would you change?

- Do you think that scenarios creation is applicable to analyse other Azorean Islands' development? □ Yes □ No
  Why?

  Is interesting to use *PReDSA*'s scenarios in that context?
  Why? □ Yes □ No

- Do you think that appraise scenarios following a series of criteria is correct? □ Yes □ No
  What would you emphasize?

- Do you agree that appraisal criteria were previously chosen? □ Yes □ No
- Do you consider positive using MC-Mapper software for that purpose? □ Yes □ No
  What would you modify?

- Do you think that the project in its whole allowed correct information sharing? □ Yes □ No
  What would you modify?

- Do you think that the process is interesting to reflect on Flores and other Azorean islands future development? □ Yes □ No

Interviewee: _____Date: _____Place:_____

3 - INTERVIEWS APRIL 2009:

BOX 3.1: Note sheets key themes	
Nature / Nature conservation	*"High potential in nature conservation"* Daniel A. "*Wild.*" Armando F. *"Nature.*" Maribel I. *"Nature conservation*" Joana and Jéssica L. "*Nature*" Eleonor M. "*Paradise in the westerly point of Europe*" António N. *"preserved natural heritage*" Tiago R. *"Natural heritage preserved*" Isabel S. "*Natural paradise*" Francisco T.
Tourism (ecotourism, rural tourism, nature tourism)	"*Ecotourism development.*" Marta C. "*Nature tourism, not massified and active. Remote and spiritual tourist destination. Remote and spiritual tourist destination.*" Jaime D. "*Nature tourism*" Armando F. "*Rural tourism.*" Maribel I. "*Rural tourism, a hope.*" João Alberto K. "*Tourism development.*" Joana and Jéssica L. "*Tourism projects.*" Maria O. "*Tourism*" Carmen P. "*An Island to visit at least once in a life time*" Alberto Q. "*Sustainable tourism*" Isabel S. "*Nature tourism and water sports development.*" Teresa V.
Demographic and social issues	"*Little social change."* Daniel A. *"Population growth* (as a hope)." Marta C. "*But population decreasing. How many are we and who we are?*" João Alberto K.
Renewable energy	*"Renewable energy*" Jaime D. *"Renewable energy.*" Maribel I. *"renewable energies*" Teresa V.
Quality of life	"*Quality of life and peacefulness*" Raul H. *"Quality of life*" Maria O. *"Quality of life.*" Tiago R.
Agriculture	"*Sustainable agriculture*" Jaime D. "*Agriculture stagnation*" Teresa V.
Waste management	"*Waste management system with reutilisation*" Maribel I. "*Waste management*" Teresa V.
Transport	"*Transport project*." Maria O. "*Problems with transport and access to the island*" Teresa V.
General on sustainability	"*Territory with economic, social and environmental cohesion. Keyword: sustainability*" João B. "*Sustainability.*" Jaime D.
Relation with the ocean	"(re)*Recognition of the sea.*" Marta C. "*Atlantic Ocean*" Eleonor M. "*Fisheries will worsen. They will only improve with more control*" Rui U.
Other	"*Beginning of a new era"* Daniel A. "*Self-sufficiency. Group (increase link with Corvo Island).*" Jaime D.

	"*'The Island' copypaste of Aldous Huxley's island concept. Agro-tourism*" Luca J. "*Vocational school (tourism, agriculture and environment). Tourism, agriculture and youth. Flores Island, an Island with future*" Carmen P. "*Wealthier, younger. With preserved natural heritage. Secure. Development*" Tiago R. "*Better IT. Weak increase in trade and industry.*" Teresa V. "*Paradise in the westerly point of Europe*" António N.

Example of an empty note sheet used in scoping interviews:

Future foresight for Flores Island:
Visões de futuro para a Ilha das Flores:

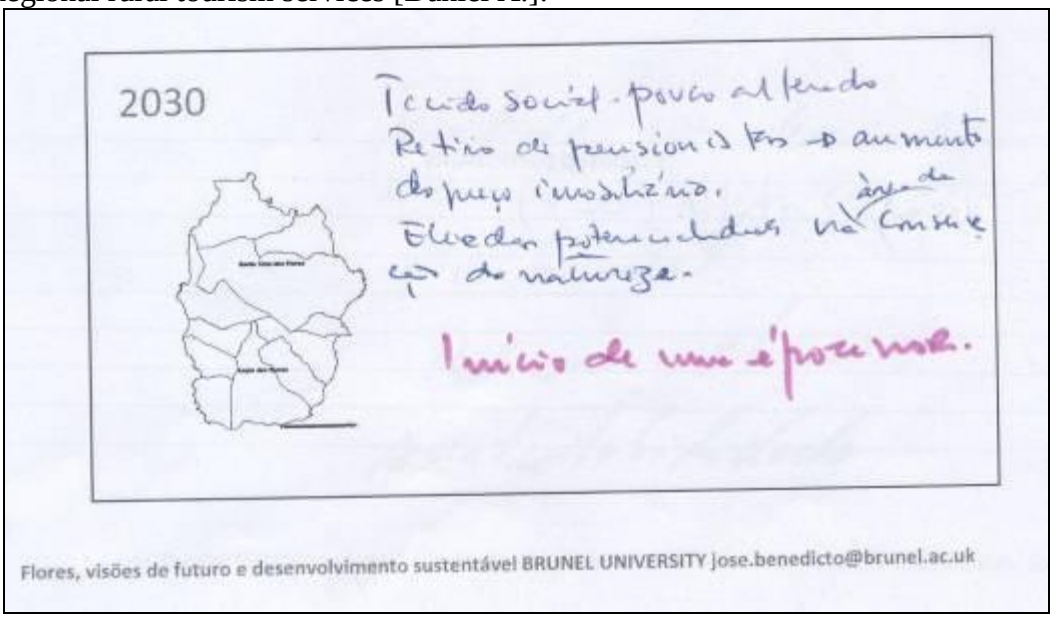
2015

2020

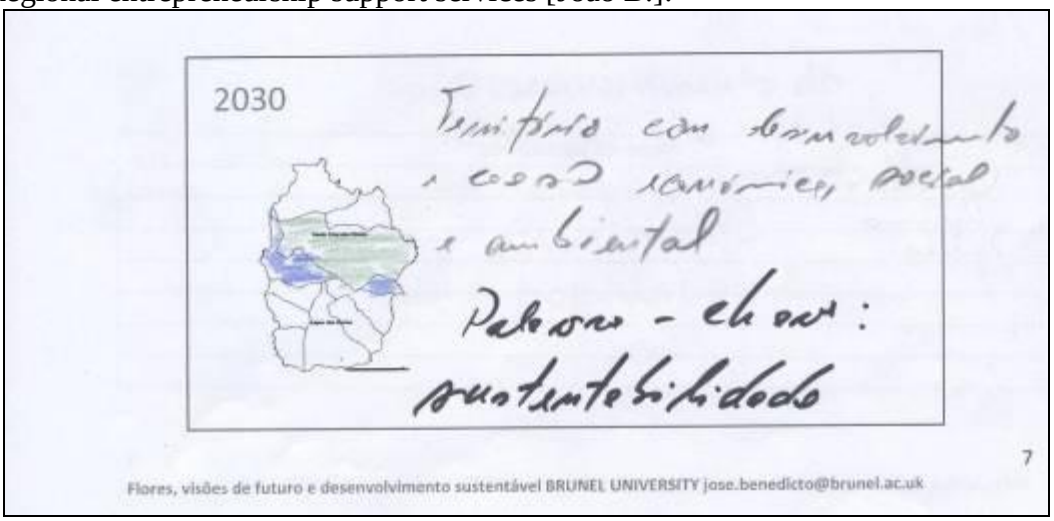
2030

Participants' answers (the empty boxes have not been scanned):

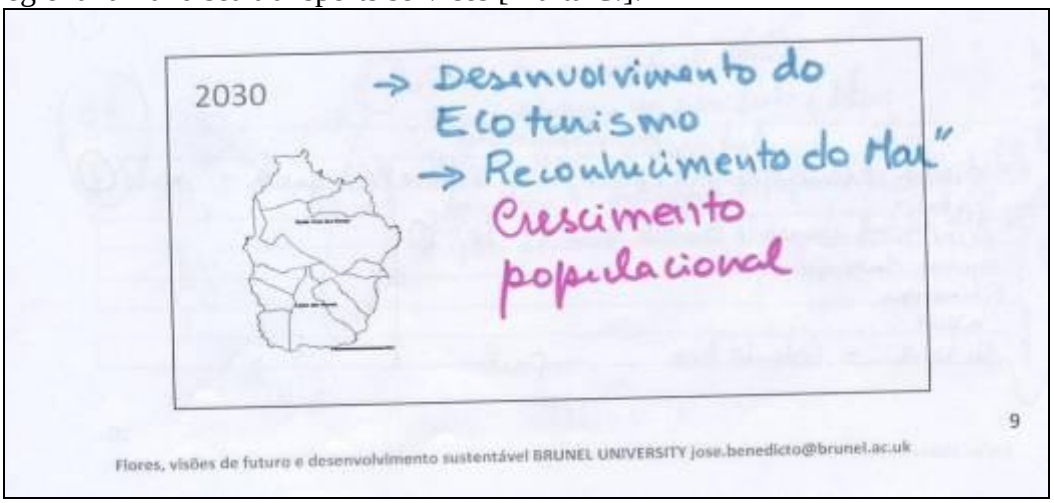
Regional rural tourism services [Daniel A.]:



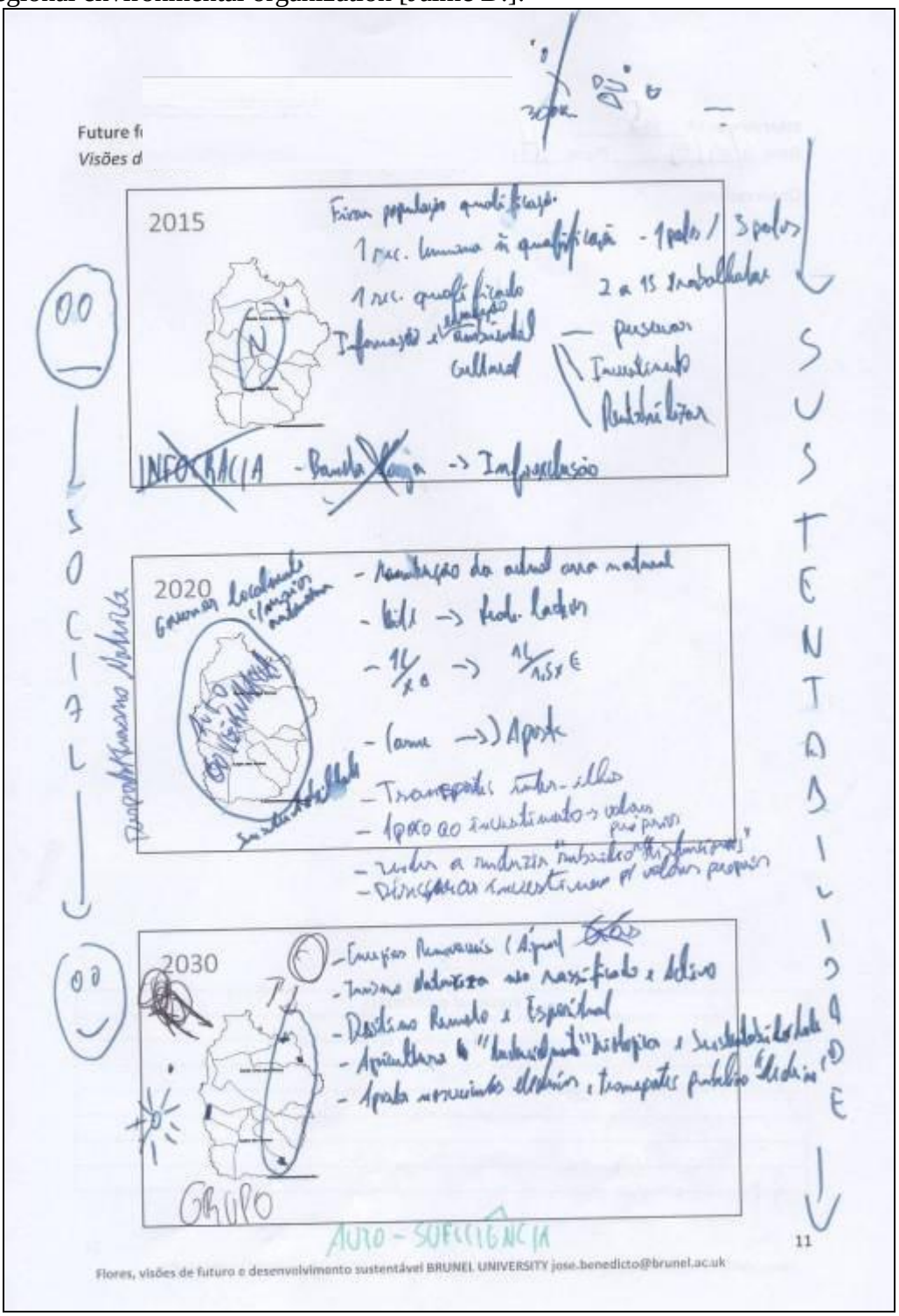
Regional entrepreneurship support services [João B.]:



Regional air and sea transports services [Marta C.]:

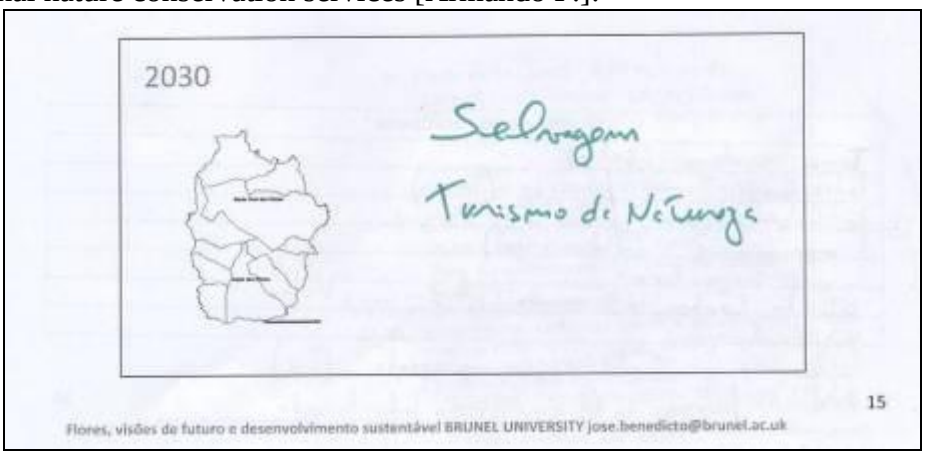


Regional environmental organization [Jaime D.]:

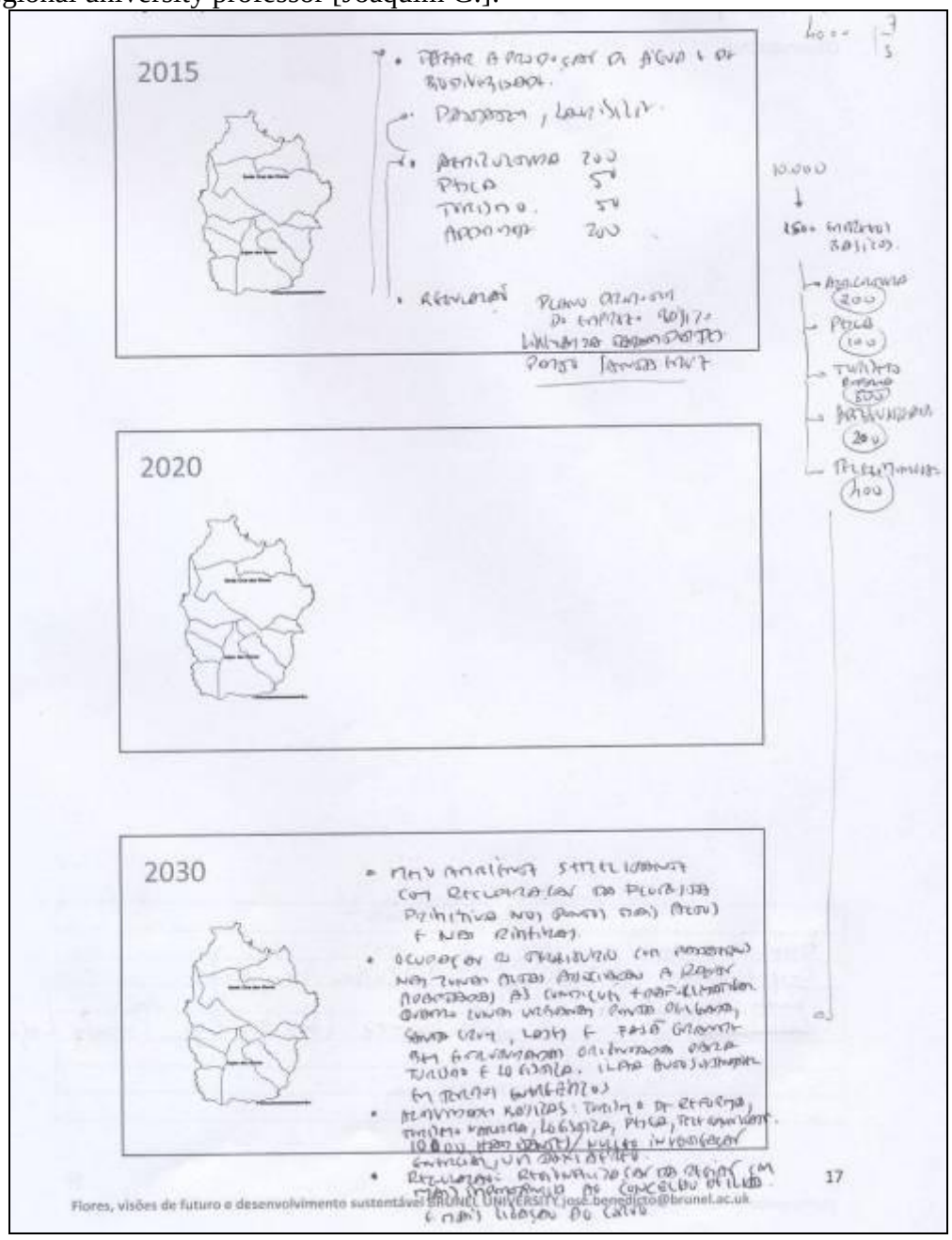


Regional commerce chamber [Pedro E.]:
None

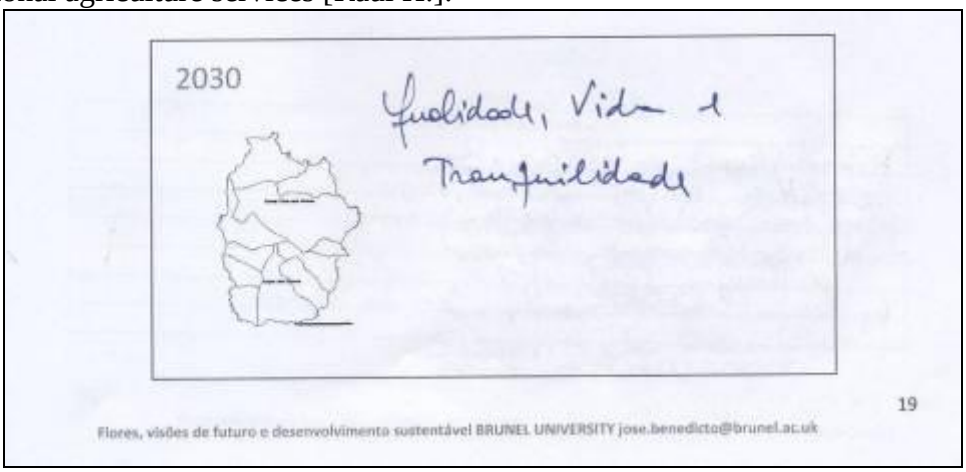
Regional nature conservation services [Armando F.]:



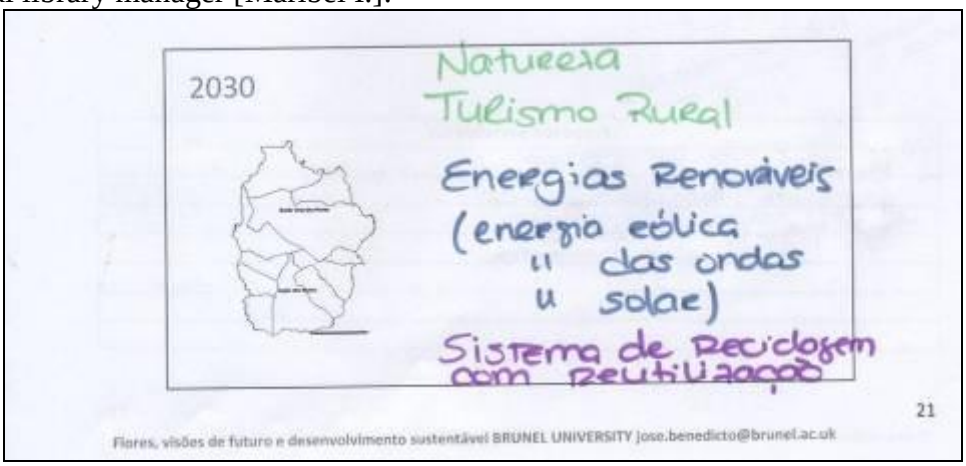
Regional university professor [Joaquim G.]:



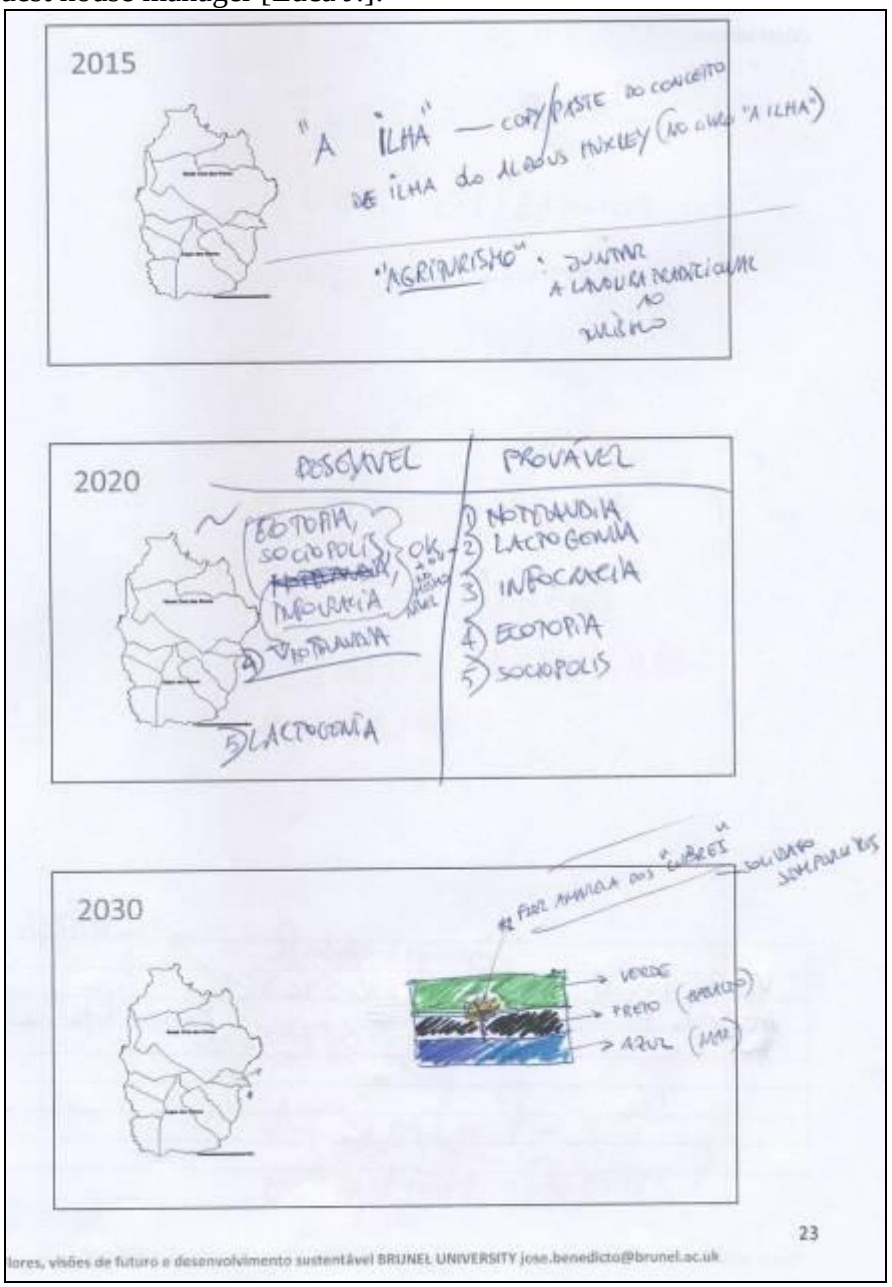
Regional agriculture services [Raul H.]:



Local library manager [Maribel I.]:

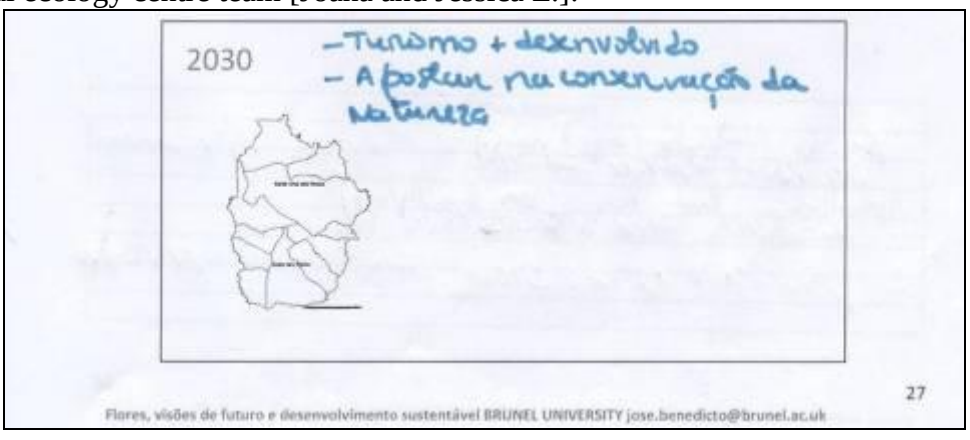


Local guest house manager [Luca J.]:

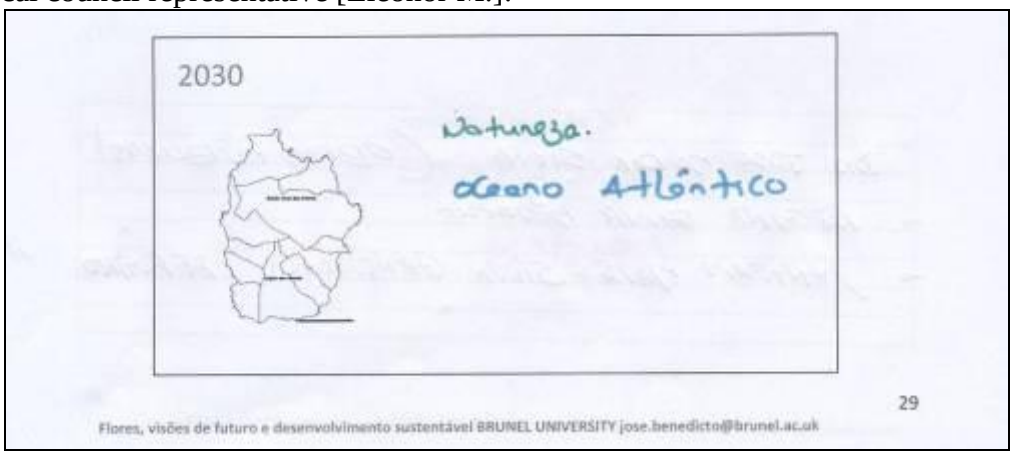


Local restaurant manager [João Alberto K.]:

Local ecology centre team [Joana and Jéssica L.]:



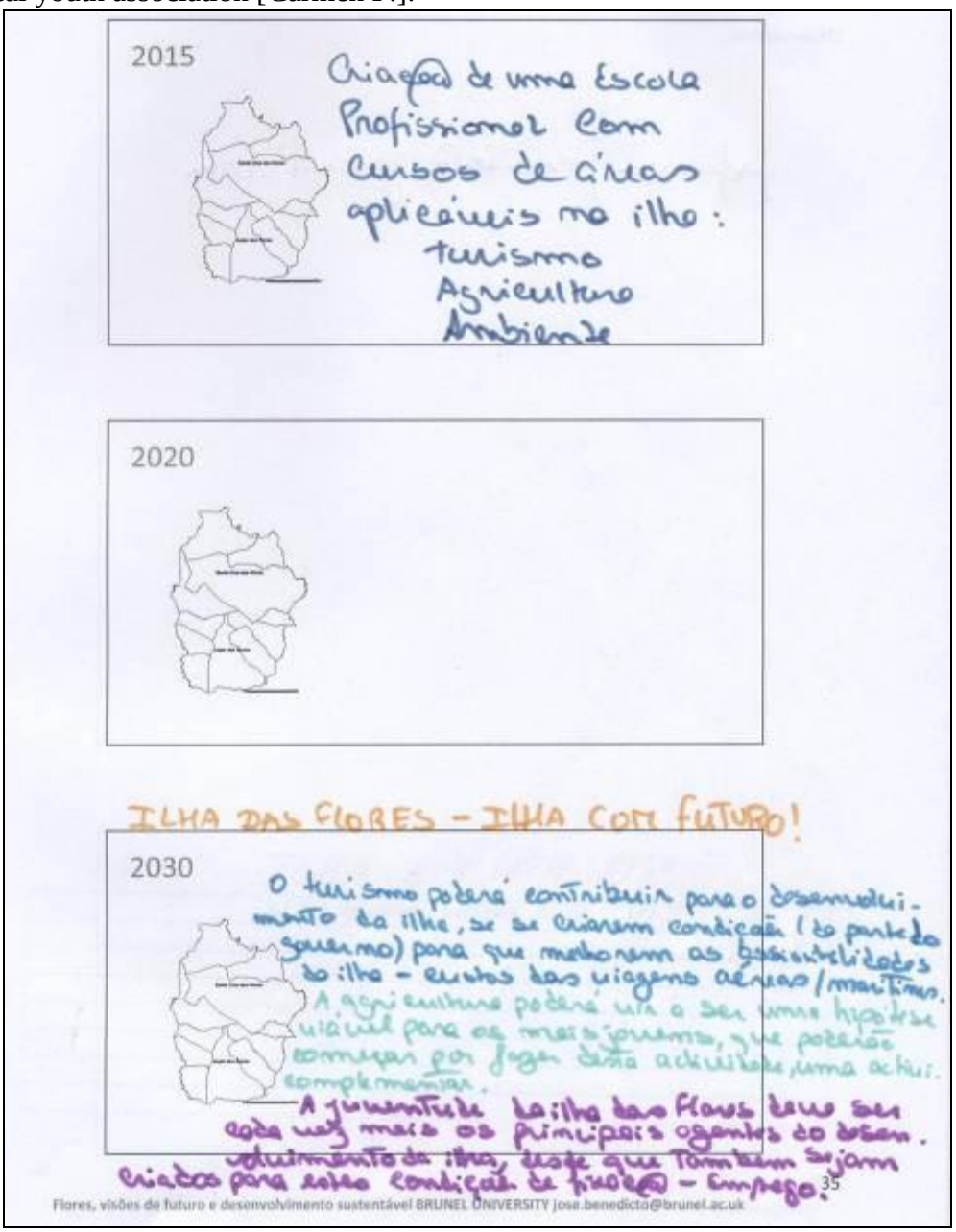
Local council representative [Eleonor M.]:



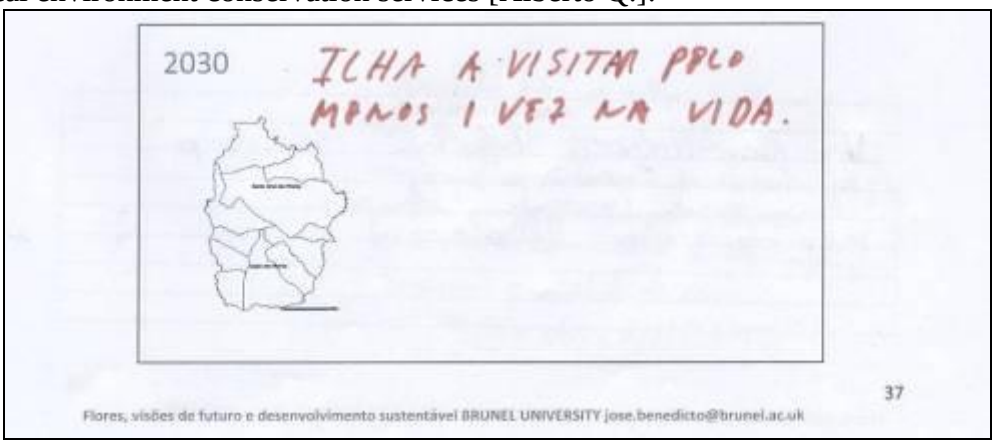
Local council representative [António N.]:

Local entrepreneurship support services [Maria O.]:

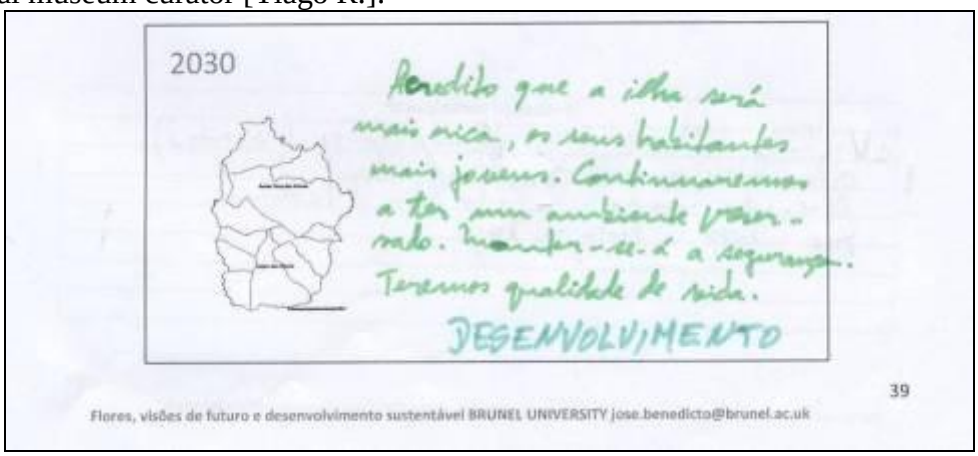
Local youth association [Carmen P.]:



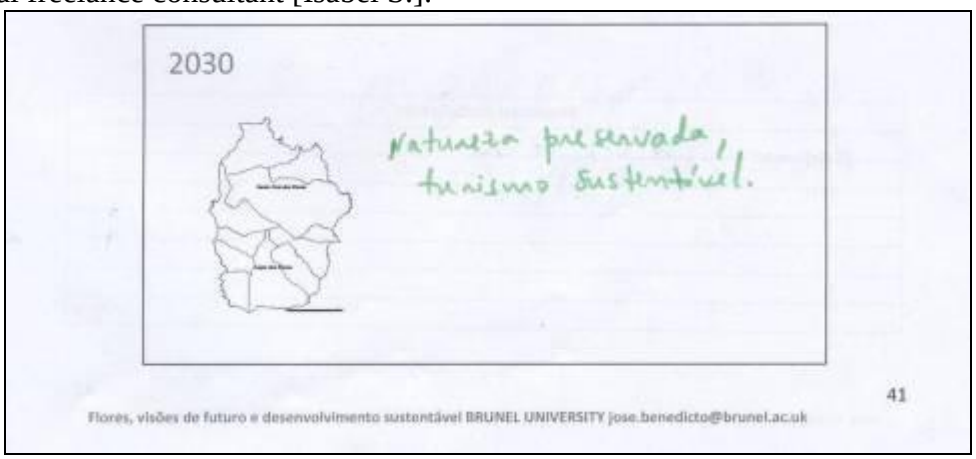
Local environment conservation services [Alberto Q.]:



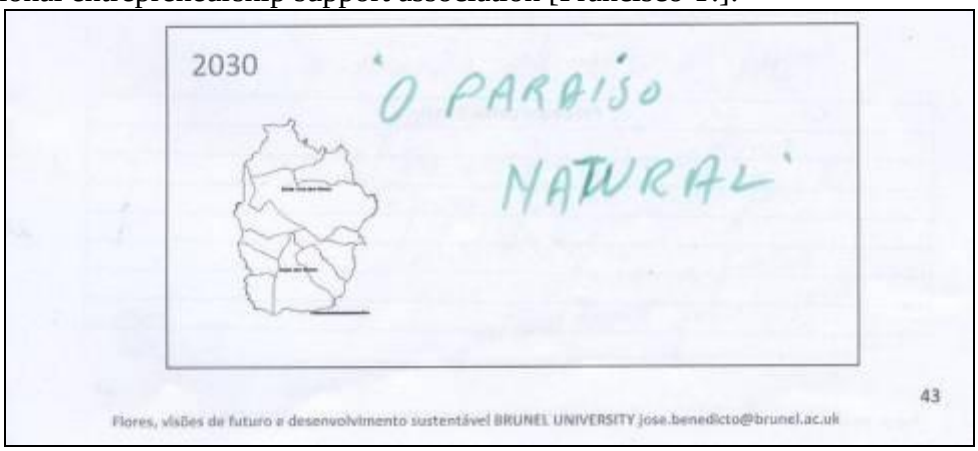
Local museum curator [Tiago R.]:



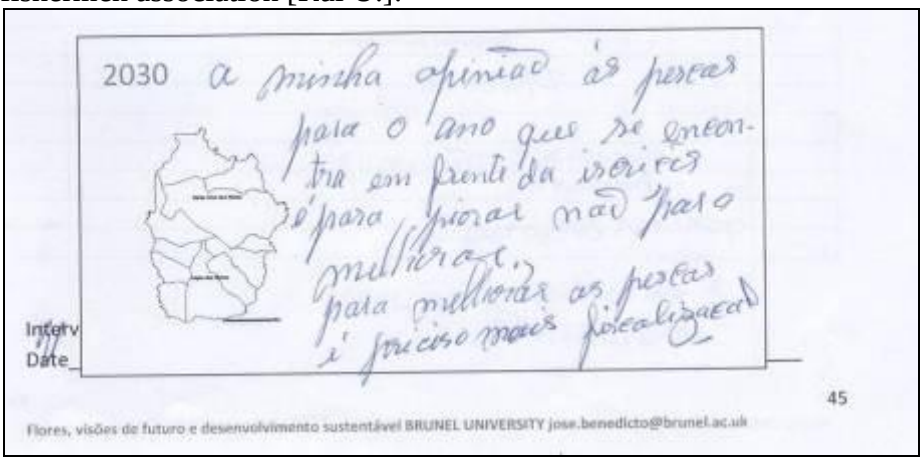
Local freelance consultant [Isabel S.]:



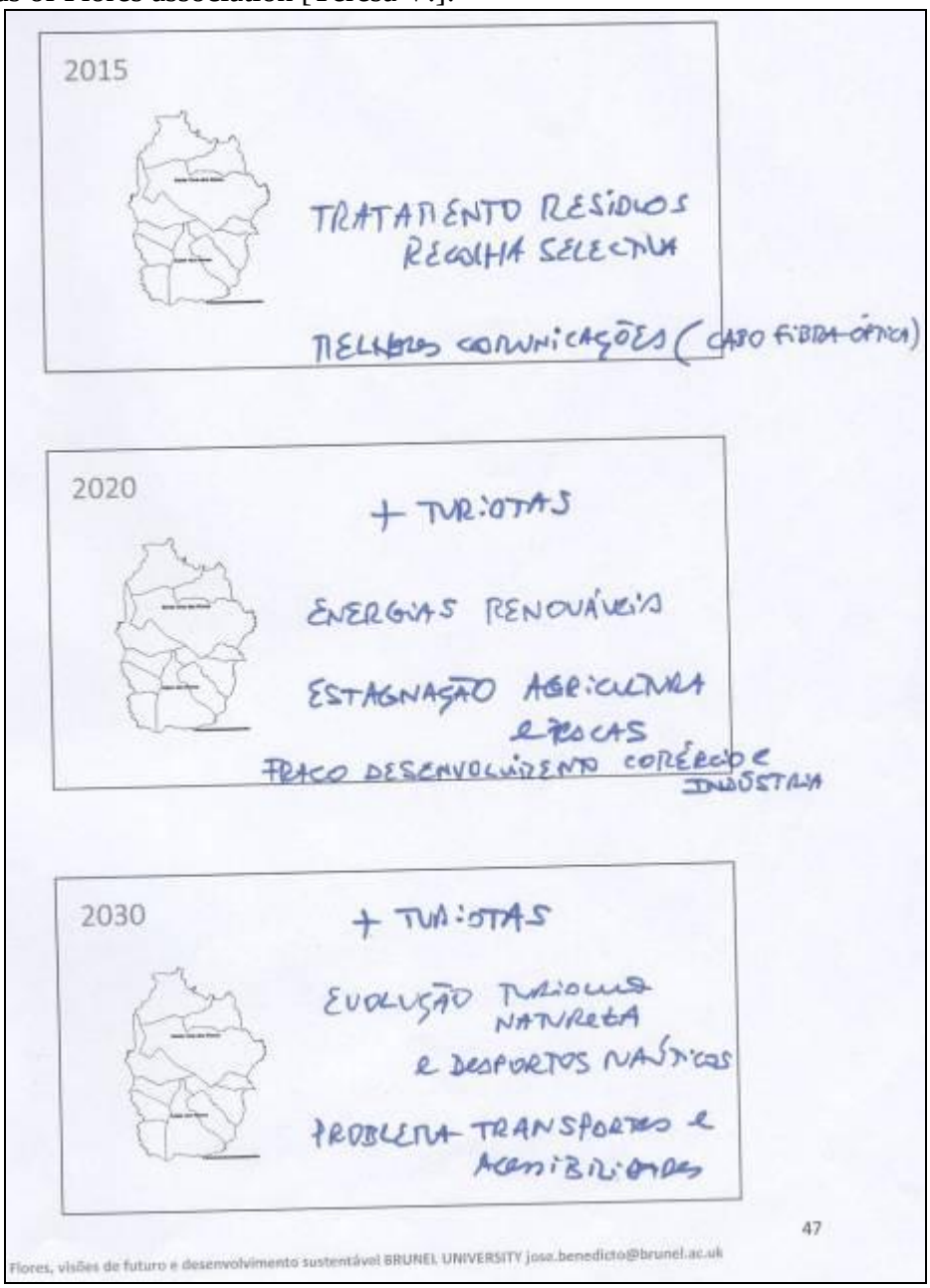
Regional entrepreneurship support association [Francisco T.]:



Local fishermen association [Rui U.]:



Friends of Flores association [Teresa V.]:



Note sheets.
Translation of the outcomes:

"Little social change. Pensioners retirement → increases real state prices. High potential in nature conservation. Beginning of a new era" Daniel A.
"*Territory with development. Economic, social and environmental cohesion. Keyword: sustainability*" João B.
"*Ecotourism development. Recognition of the sea. Population growth (as a hope)*" Marta C.
"*Self-sufficiency. Group (increase link with Corvo Island). Sustainability. Renewable energy. Nature tourism, no mass tourism and active. Remote and spiritual tourist destination. Sustainable agriculture.*" Jaime D.
"*Wild. Nature tourism*" Armando F.
"*Quality of life and peacefulness*" Raul H.
"*Nature. Rural tourism. Renewable energy (wind, tidal, solar). Waste management system with reutilisation*" Maribel I.
"'*The Island' copypaste of Aldous Huxley's island concept. Agro-tourism.*

Flag: Green, Black (volcanic rocks), Blue (sea). Yellow flower Seaside Goldenrod (*Soligago sempervirens*)" Luca J.
"*Rural tourism, a hope. But population decreasing. How many are we and who we are?*" João Alberto K.
"*Tourism development. Nature conservation*" Joana and Jéssica L.
"*Nature. Atlantic Ocean*" Eleonor M.
"*Paradise in the westerly point of Europe*" António N.
"*Transport project. Tourism projects. Quality of life*" Maria O.
"*Vocational school (tourism, agriculture and environment). Tourism, agriculture and youth. Flores Island, an Island with future!*
Tourism can contribute to the island's development, if the government sets the conditions to improve the transport to the island (air and sea).
Agriculture can be an option for the youth population, agriculture can be a complementary activity.
Youth population should be the main agents in the island's development, but employments should be available." Carmen P.
"*An Island to visit at least once in a life time*" Alberto Q.
"*Wealthier, younger. With preserved natural heritage. Secure. Quality of life. Development*" Tiago R.
"*Natural heritage preserved. Sustainable tourism*" Isabel S.
"*Natural paradise*" Francisco T.
"*My opinion is that fisheries will worsen. They will only improve with more control*" Rui U.
"*Waste management, better IT. Tourism development, renewable energies. Agriculture stagnation and weak increase in trade and industry. Nature tourism and water sports development. Problems with transport and access to the island*" Teresa V.

4 - DISCLOSURE MATERIAL:

4.1 - **Communication 1**

4.2 - **Communication 2**

4.3 - **Communication 3**

4.4 - **Research blog, http://flores-visoesdefuturo.blogspot.com/**

4.5 - **The project in the local and regional press (scanners)**

This material is presented as disclosed to the public and the research participants. Editing it in the thesis format produced some presentation changes, such as a white background instead of the original light colours backgrounds.

4.1 - Communication 1

Flores, visões de futuro e desenvolvimento sustentável

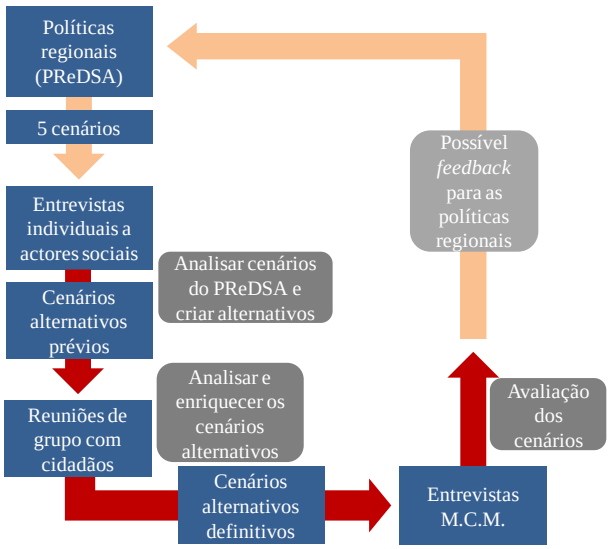
A presente investigação debruça-se sobre a gestão sustentável em ilhas e a tomada participativa de decisões. Nesse sentido o caso da **Ilha das Flores** reveste-se de grande interesse para desenvolver este estudo.

Esta investigação pretende debruçar-se sobre processos de tomada de decisão que incorporem as expectativas dos principais actores sociais, dos parceiros (locais e regionais) e da população local. Estas ferramentas têm como objectivo estratégico uma gestão mais sustentável, responsável e participada da Ilha das Flores, estando a metodologia de actuação centrada em três fases fundamentais:

- Fase 1: Entrevistas (*scoping interviews*) com actores chave para desenvolver cenários futuros para as Flores.

- Fase 2: Reuniões de grupo (*focus group meetings*) com cidadãos da Ilha das Flores para acrescentar essas visões de futuro.

- Fase 3: Entrevistas com os participantes da Fase 1 no objectivo de realizar uma avaliação multi-critério (entrevistas MCM: http://www.multicriteria-mapping.org/) dos diferentes cenários para as Flores.



A investigação foca-se nos planos de ordenamento e desenvolvimento da região, com destaque para o PROTA http://sram.azores.gov.pt/drotrh/prota/documentos.htm, o PReDSA http://sra.azores.gov.pt/predsa/ e, em menor medida, o POTRAA. Em anexo poderão ser consultados alguns dados relevantes dos vários planos de ordenamento e estudos de desenvolvimento.

O estudo de base '*Perspectivas para a Sustentabilidade na Região Autónoma dos Açores*' permitiu o desenvolvimento de uma série de cenários e indicadores para o futuro desenvolvimento sustentável da região. No estudo foram descritos cinco cenários de desenvolvimento para o conjunto do arquipélago ("Hotelândia", "Lactogenia", "Ecotopia", "Sociopolis" e "Infocracia"). A própria equipa técnica responsável pelo estudo reconhece nas considerações finais do relatório as limitações deste estudo: diferentes pontos de vista sobre alguns conceitos (por exemplo a sustentabilidade) e necessidade em ampliar a participação pública.

O presente estudo pretende, na mesma linha do PreDSA, realizar um processo de avaliação participativa de oportunidades de desenvolvimento para o futuro, focando-se para tal num caso de estudo concreto, e procurando identificar de modo participativo uma série de oportunidades e cenários de desenvolvimento para o futuro. Não se pretende criar uma política de gestão para a Ilha, mas sim, através da participação de parceiros regionais e locais, desenvolver e apresentar propostas de cenários de desenvolvimento sustentável (sustentabilidade ecológica, económica e social).

Nesse sentido, no mês de **Abril** de **2009,** vão ser entrevistados uma série de actores chave locais e regionais relevantes em diferentes sectores de actividade na ilha. Nessas entrevistas vão ser discutidas e analisadas visões de desenvolvimento sustentável para a ilha das Flores, considerando também a recente declaração da ilha como Reserva da Biosfera pela Unesco. De uma forma mais formal, mas sempre pela óptica da sustentabilidade, será analisada a situação económica actual, os novos desafios que surgem e o modo como esta situação altera as perspectivas de desenvolvimento propostas nos planos e relatórios oficiais anteriormente referenciados. Dar-se-á especial destaque às problemáticas do desenvolvimento turístico, da conservação da biodiversidade, da floresta, da pesca, das exportações de bens e das perspectivas de criação de emprego, pelo seu elevado grau de sensibilidade e importância estratégica para o desenvolvimento sustentável da ilha.

Contacto: jose.benedicto@brunel.ac.uk

Anexos:

1 – Plano Regional de Ordenamento do Território para a Região Autónoma dos Açores. Avaliação Ambiental Estratégica do PROTA, Relatório Ambiental

Ilha das Flores
Avaliação Ambiental: Oportunidades, Riscos e Recomendações
À semelhança do Corvo, a ilha das Flores possui uma elevada incidência territorial de áreas ecológicas complementares e áreas nucleares de conservação da natureza. Deste modo, considera-se muito relevante a promoção da utilização sustentável do património natural das Flores, enquanto elemento central da sua estratégia de sustentabilidade global. Esta vocação da ilha deverá ser aprofundada nos PMOT, PEOT e planos sectoriais relevantes, destacando-se a aposta no turismo científico e da natureza. Salienta-se a importância da promoção da participação activa da população nos vários processos de planeamento a realizar e implementar. As acções estratégicas preconizadas ao nível da reutilização do parque habitacional e do estabelecimento de serviços e infra-estruturas de saneamento ambiental e gestão de resíduos, poderão ter impactes positivos em diversos factores de avaliação, em especial na dinâmica territorial, nos recursos naturais, na qualidade do ambiente e na biodiversidade e conservação da natureza. O modelo territorial do PROTA propõe a contracção das áreas de expansão urbana em Stª Cruz e admite uma expansão marginal nas Lajes das Flores, o que se considera globalmente positivo. O previsto reforço da ligação viária entre estas duas áreas urbanas, bem como das ligações aos restantes aglomerados urbanos, deve ser alvo de procedimentos obrigatórios de avaliação e gestão ambiental, de modo a evitar impactes negativos associados, por exemplo, à ocupação e uso do solo, à biodiversidade e à qualidade do ambiente, resultantes do correspondente aumento dos territórios artificializados e da potencial interferência com áreas naturais e semi-naturais com valor ambiental. Assim, recomenda-se que seja avaliada e considerada a compatibilidade territorial na futura localização de novas infra-estruturas ou ampliação de infra-estruturas existentes na ilha, dada a sua sensibilidade. No domínio das acessibilidades, destaca-se ainda a opção de não promover o fecho da circunvalação da ilha, o que se considera adequado para evitar impactes negativos significativos sobre os sistemas de protecção e valorização ambiental. A aposta do modelo territorial na reserva de áreas para a produção de energias renováveis para a ilha das Flores perspectiva o aumento dos níveis de auto-suficiência energética com o desenvolvimento da produção de origem eólica e hídrica, apresentando impactes positivos para a utilização de recursos naturais, emissão de GEE, qualidade do ambiente e desenvolvimento económico, caso resulte numa efectiva redução na produção de energia térmica. Por outro lado, devem ser considerados e ponderados os eventuais impactes negativos gerados, sobretudo pela energia hídrica, que pode acarretar riscos ao nível dos recursos hídricos, da fragmentação de habitats e da consequente perda de biodiversidade. Importa que estas intervenções no território sejam alvo de procedimentos obrigatórios de avaliação e gestão ambiental, designadamente AIA. As medidas de valorização prioritária de habitats, de reconversão de usos para sistemas naturalizados visando o eficaz controlo dos processos de eutrofização de algumas lagoas, e de integração paisagística de áreas de extracção de inertes apresentam impactes ambientais muito positivos em especial para a biodiversidade, recursos naturais e qualidade do ambiente. A aposta no desenvolvimento dos serviços e das TIC afigura-se uma oportunidade para potenciar uma abertura ao mundo que se poderá reflectir numa cidadania mais activa e num melhor bem-estar da população, e num factor de competitividade importante para atrair novas actividades económicas. A criação, em Sta Cruz das Flores, de uma área de concentração de serviços avançados à actividade produtiva pode possibilitar uma maior eficácia no controlo de eventuais impactes ambientais gerados por este tipo de actividades. Esta medida poderá ser potenciada através da implementação de um sistema de gestão ambiental, incluindo um programa de monitorização e mitigação de impactes ambientais gerados. Importa garantir que nos diferentes planos, programas e projectos implementados a jusante do PROTA, as estratégias e opções de desenvolvimento estão devidamente articuladas com as orientações traçadas.

Fonte: PROTA, Relatório Ambiental Avaliação Ambiental Estratégica do Plano Regional de Ordenamento do Território dos Açores, p.88

2 - Estudo de Base, Perspectivas para a Sustentabilidade na Região Autónoma dos Açores, PReDSA.

Dados de base considerados para o cálculo do Dashboard of Sustainability, do Índice de DesenvolvimentoHumano (IDH) e da Pégada Ecológica

Análise entre as nove ilhas dos Açores:

INDICADOR	SMA	SMG	TER	GRA	SJO	PIC	FAI	FLO	COR
Dimensão Ambiental									
Usos do solo (área florestal) [%]	20	27	24	19	30	38	24	52	40
Concelhos com PDM (PDM em vigor ou revisão) [%]	0	67	0	0	0	33	100	0	100
Intensidade de exploração de água [%]	17	30	29	27	6	2	18	7	4
Qualidade das águas subterrâneas [% de análises conformes]	88	89	89	86	88	41	74	90	100
Qualidade das águas balneares [% de praias conformes]	100	86	100	100	50	100	100	0	100
Necessidades por tipo de utilizador (Necessidades totais *per capita*) [$m^3 hab^{-1}$]	103	118	119	97	116	105	101	112	92
População servida por água com qualidade adequada [%]	80	80	80	80	74	58	80	80	80
População servida por sistemas adequados de DTAR [%]	4	21	42	0	1	0	10	1	0
Áreas protegidas e classificadas (área classificada terrestre) [%]	2	9	13	6	16	30	15	27	52
Produção de RSU [$kg hab^{-1} dia^{-1}$]	2,05	1,21	1,26	1,23	1,06	1,03	1,85	2,73	0,22
Produção de resíduos industriais (RIP) [% RI]	3,0	1,9	3,4	3,4	0,2	1,3	0,8	1,0	1,0
Valorização e reutilização de resíduos [% RIP encaminhados para destino recomendável]		46	41			3		19	0
Dimensão Económica									
PIB *per capita* [%]	2,10	55,20	23,90	1,20	3,50	5,30	7,20	1,50	0,10
Taxa de criação e sobrevivência de empresas (crescimento das sociedades) [%]	20	14	19	3	11	4	16	4	0
Solo arável [%]	2	8	8	10	3	3	4	1	1
Utilização de agroquímicos (fertilizantes) [$kg ha^{-1}$ de SAU]	183	821	741	233	429	610	257	118	44
Encabeçamento pecuário [$CN ha^{-1}$]	1,45	3,60	3,13	2,57	1,80	1,28	2,06	0,81	0,90
Intensidade de exploração dos recursos piscícolas (pesca descarregada) [$kg hab^{-1}$]	80	40	21	25	22	174	83	15	38
Capacidade de alojamento (lugares em hotelaria tradicional) [lugares $10^3 \cdot hab^{-1}$]	55	29	23	16	16	28	516	38	
Intensidade turística [n^odormidas hab^{-1}]	0,30	0,52	0,24	0,18	0,17	0,27	0,49	0,26	
Consumo de energia eléctrica *per capita* [$kWh hab^{-1}$]	2 616	2 311	2 100	1 693	1 906	1 964	2 429	1 994	874
Produção de energia eléctrica proveniente de FER [%]	0,46	41,40	3,47	6,37	9,28	0,00	1,36	46,20	0,00
Intensidade energética [TEP $10^3 \cdot €^{-1}$ de PIB]	1,06	0,04	0,08	1,17	0,46	0,33	0,31	1,12	9,00
Utilização de transportes públicos (carreiras urbanas e interurbanas) [$hab km^{-1} ano^{-1}$]	706	54 235	18 794	1 247	1 060	4 952	2 061	923	
Taxa de motorização [n^oveículos $10^3 hab^{-1}$]	440	322	395	364	450	376	474	377	179
Dimensão Social									
Densidade populacional [$hab km^{-2}$]	57	175	137	78	39	33	86	28	25
Taxa de envelhecimento [%]	64	46	72	125	106	127	85	109	187
Taxa de dependência [%]	59	48	51	54	53	51	47	55	52
Taxa de crescimento populacional (taxa de crescimento efectivo) [%]	-5,8	4,5	0,2	-7,9	-5,3	-2,6	1,0	-7,7	8,1
Taxa de desemprego [%]	8	8	6	8	5	4	5	6	8
Taxa de equidade salarial por género (salário feminino) [%]	57	79	100	100	82	75	76	71	67
Taxa de mortalidade infantil [‰]	8,5	8,1	6,8	19,4	7,5	9,7	9,9	19,9	
Esperança média de vida [anos]	71	72	72	72	74	72	73	72	69
Taxa de população por serviços de saúde [$hab \cdot cama^{-1}$]	270	130	93	294	179	313	130	204	
População com o ensino secundário completo [%]	12	10	10	6	5	6	14	6	9
Taxa de analfabetismo [%]	10	12	9	14	10	6	6	8	6
Taxa de alunos por docente [n^oalunos $\cdot docente^{-1}$]	7	10	9	6	6	6	9	6	3
Taxa de infra-estruturas culturais [n^o $hab \cdot$ infra-estrutura cultural^{-1}]	7,46	9,52	8,88	5,95	6,43	6,12	8,63	6,28	2,58
Caracterização habitacional (população residente em alojamento familiar precário) [%]	0,70	0,50	0,99	0,25	0,53	0,68	1,00	0,15	0,00
Taxa de criminalidade [n^ocrimes $\cdot 10^{-3} hab^{-1}$]	35	51	39	20	32	31	47	45	
Dimensão Institucional									
Absentismo eleitoral [%]	57	54	50	48	44	43	45	42	32
Planos de emergência (concelhos com Plano Municipal de Emergência) [%]	100	67	50	100	0	0	100	50	100
Entidades de Administração Pública Regionais [n^o]*	13	121	85	12	16	17	48	13	3
Superfície média afecta a Entidades de Administração Pública Locais [$km^2 \cdot$ órgão^{-1}]*	19	12	13	15	22	26	13	13	1

*Nota: Indicadores adicionais ao sistema de indicadores proposto.

SMA – Santa Maria, **SMG** – São Miguel, **TER** – Terceira, **GRA** – Graciosa, **SJO** – São Jorge, **PIC** – Pico, **FAI** – Faial, **FLO** – Flores, **COR** – Corvo

Fonte: Estudo de Base, Perspectivas para a Sustentabilidade na Região Autónoma dos Açores, p.235

3 - Plano de Ordenamento Turístico da Região Autónoma dos Açores, dados

Quadro estratégico de referência

Dimensões estratégicas	Corvo	Faial	Flores	Graciosa	Pico	SãoJorge	Santa Maria	SãoMiguel	Terceira
Potencial intrínseco de base (Superfície e População)	*	***	**	**	***	***	**	*****	****
Recursos turísticos existentes(quantidade e qualidade)	*	****	***	**	****	***	**	*****	****
Diversidade e originalidade dos recursos turísticos	**	*****	****	***	*****	****	***	*****	*****
Desenvolvimento actual do sector turístico	*	****	**	**	***	**	**	*****	****
Potencial de desenvolvimento do sector turístico	*	****	***	**	****	***	***	*****	****
Dinâmica recente de investimentos no sector	*	***	**	**	**	**	**	*****	****
Fase de desenvolvimento do sistema turístico	NA	EA	EFPE	EFPE	EFPE	EFPE	EFPE	EFA	EA
Principais «produtos» turísticos	Comuni. Natureza.	Náutica. Recreio. Golfe. Baleia. Natureza.	Natureza. Mergulho. Pedestri. Repouso.	Termal. Patr. Ed. Vulcanis.	Baleia. Natureza. Vinha/Vinho.	Queijo. Natureza. Fajãs.	Natureza. Praia. Golfe.	Vulcanis. Natureza. Termal. Golfe. Outros.	Vulcanis. Natureza.
Acessibilidades directas com o exterior por via aérea	Não	Sim	Não	Não	Sim	Não	Sim	Sim	Sim
Lógica principal de integração territorial turística	Is	Multi	Is	Is	Multi	Multi	Bi	Global	Multi
Capacidade para desenvolver uma estratégia específica e independente no domínio do turismo	N	PL	PA	F	PA	F	PA	PL	PL
Lugar no quadro turístico actual	Periferia Distante.	Centro de 2.ª Ordem.	Periferia de 2.ª Ordem.	Periferia de 2.ª Ordem.	Periferia de 1.ª Ordem.	Periferia de 1.ª Ordem.	Periferia de 2.ª Ordem.	Centro de 1.ª Ordem.	Centro de 2.ª Ordem.

Legenda: * Muito Fraco; ** Fraco; *** Médio; **** Forte; ***** Muito Forte

EFPE: Estruturado em Fase Precoce de Estruturação **Is:** Isolada **PA:** Parcialmente

Capacidade máxima e distribuição de camas por ilha e situação em Abril de 2005

Ilha	A Camas existentes (Abril de 2005) (1) — Número	A — Percentagem	B Camas em 2015 (2) — Número	C Margem de variação (bolsa)	Total (B + C) — Número
Corvo	0	0	80	8	88
Faial	928	10,9	1 734	173	1 907
Flores	203	2,4	578	58	636
Graciosa	79	0,9	330	33	363
Pico	460	5,4	1 060	106	1 166
Santa Maria	345	4,1	660	66	726
São Jorge	198	2,3	553	56	609
São Miguel	4 854	57,1	7 605	761	8 366
Terceira	1 431	16,8	2 900	290	3 190
Total	8 093	100	15 500	1551	17 051

(1) Dados fornecidos pela DRT.
(2) Camas propostas.

Apostas estratégicas por ilhas – reforço das centralidades:

	Estratégia específica da oferta/produtos	**Estratégia de articulação territorial**
Flores	Diversidade paisagística Comunidade Repouso Mergulho Pedestrianismo	Afirmação da individualidade do destino e reforço da ligação ao Corvo.

Fonte: Diário da República, 1.ª série – N.º 154 – 11 de Agosto de 2008, p.5426-5427

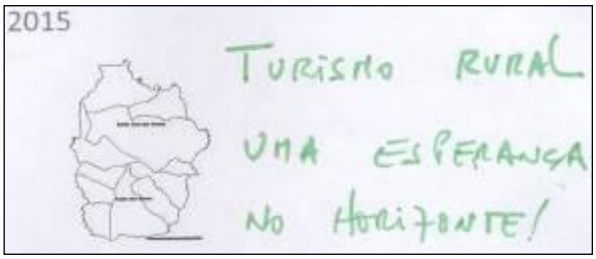
4.2 - Communication 2

Flores, visões de futuro e desenvolvimento sustentável

No mês de Abril 2009 foram realizadas 23 entrevistas a agentes sociais e decisores com perspectivas relevantes sobre o desenvolvimento da Ilha das Flores. Estas entrevistas permitiram desenvolver **dois cenários para a Ilha em 2030** (estes cenários não vão ter uma utilidade política, mas são úteis no contexto do estudo): **Cenário do desenvolvimento standard** e **Cenário do desenvolvimento equilibrado**. O objectivo destes cenários é fornecer visões realistas e específicas quanto ao futuro da ilha. Estes cenários serão utilizados em entrevistas de grupo onde os participantes deverão reagir e dar a sua opinião. Vai ser uma oportunidade para que os agentes sociais e os decisores considerem as opiniões e reacções da população local.

Este documento apresenta os cenários para as Flores em 2030. O primeiro reagrupa visões que tendem a relacionar o desenvolvimento da ilha com infraestruturas "importantes" que vão impulsionar o processo de crescimento, imitando numa escala mais reduzida (e considerando as características gerais da Ilha) o modelo das ilhas maiores. O segundo cenário aponta para um desenvolvimento que considera constantemente a sustentabilidade natural e social (valorizando factores tais como a Reserva da Biosfera, a agricultura biológica, as tradições e a qualidade de vida da população local), estipulando que a Ilha tem de manter e melhorar as suas únicas características.

O **cenário do desenvolvimento standard** é o cenário do desenvolvimento através do investimento público em infraestruturas, apostando num sector primário mais intensivo que vai permitir exportar alguns produtos agrícolas (carne de bovino, leite e produtos derivados da leite) e um modelo de turismo mais estandardizado (apostando nas oportunidades da ilha mas não priorizando o impacto ambiental mínimo).



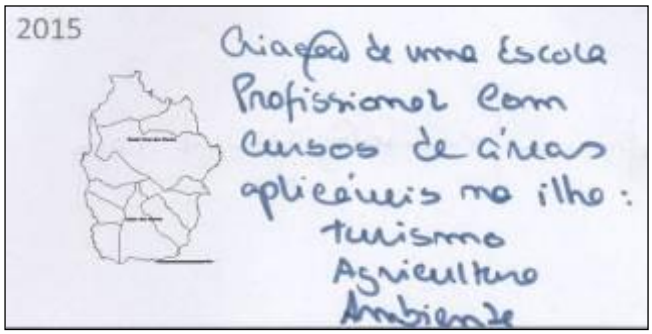
Turismo: É considerado como um dos únicos sectores com futuro, desde que seja efectuada uma importante aposta no turismo, tentando atrair um alto número de turistas, desenvolvendo estruturas convencionais de hotelaria. Forte campanha de comunicação para incrementar o número de visitantes, sem considerar mercados específicos nem o impacto ambiental das actividades e infraestruturas (por exemplo no caso da pesca desportiva ou na construção).

"se efectivamente houver um desenvolvimento no sentido de melhorar as accesibilidades e os custos dessas accesibilidades penso que as Flores poderão ter ambição de viver muito à custa do turismo"
Francisco T. Organização de apoio ao investimento nas áreas rurais

Agricultura e pesca: os agricultores são formados de acordo com o uso de técnicas adaptadas e optimizadas. A sua actividade está mais focalizada na produção eficiente e estratégias de exportação (de produtos derivados da leite e carne). A utilização no marketing do estatuto da Reserva da Biosfera é feita de uma forma mais arrivista, a agricultura não é necessariamente amiga do ambiente; a exportação requer um sistema produtivo mais intensivo que pode desequilibrar os ecossistemas naturais. A pesca tem uma orientação produtivista e orientada à exportação, podendo apresentar riscos para certas espécies.

"Eu defendia a laurissilva nas zonas de maior declive e nas zonas mais agrestes onde não é possível ter gado"
Joaquim G. Professor Universidade dos Açores

Investimentos chave: o investimento vai ter como objectivo atrair mais população (criação de empregos e desenvolvimento de infraestruturas atractivas). Alguns exemplos de possíveis investimentos poderiam ser: melhorar as infraestruturas de transporte para facilitar as exportações e para apoiar o crescimento populacional e do turismo (aeroporto e porto) e melhorar as estradas da ilha. Mas também incrementar os serviços de saúde na ilha acompanhando o crescimento da população, e desenvolvendo atractivas (e se calhar sobre-dimensionadas) instalações turísticas. Possível criação de uma escola profissional com o objectivo de preparar a população nos sectores estratégicos, nomeadamente os focalizados na produtividade.



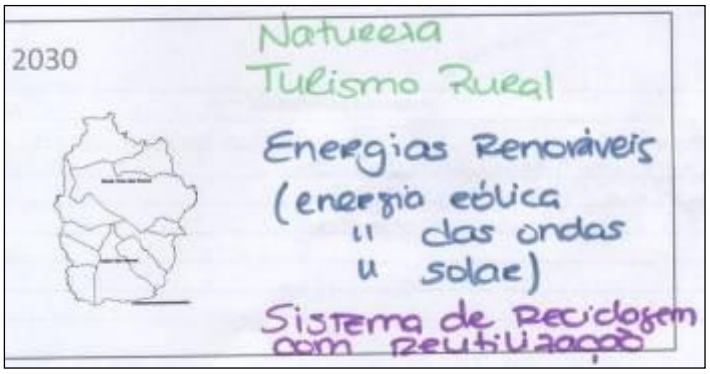
"...ilhas como as Flores e outras muito afastadas dos grandes centros são aquelas em que a gente precisa de grandes comunicações e de grandes telecomunicações" Raul H. Representante Secretaria regional da agricultura

Estratégia a largo prazo: o objective é um incremento importante da população invertendo assim a actual tendência. Esforços especialmente realizados na coesão com as outras ilhas, tentando igualar o standard das ilhas maiores. Mas existe um certo nível de desleixo, como por exemplo não se fazerem esforços não produtivos para conservar o património da ilha, que em parte pode ser sacrificado para conseguir os objectivos marcados.

"...tudo isso da uma certa animação socio-econômica promove o comercio, promove a agricultura, promove o desenvolvimento. Porque o que a ilha precissa é de pessoas, só que as pessoas não se fixam la se não houver econômia." Joaquim G. Professor Universidade dos Açores

Possível efeito caso este modelo de desenvolvimento não tiver efeitos positivos: os esforços feitos para desenvolver a ilha não produzirem os resultados esperados: não incremento da população; investimentos fragilizadores da estrutura natural da ilha; aumento da dependência com o exterior.

O **cenário do desenvolvimento equilibrado** é o cenário do desenvolvimento através de altos standards de qualidade de vida e qualidade ambiental e valorização dos valores próprios associados à própria natureza e vivência da Ilha, apostando por exemplo fortemente no estatuto da Reserva da Biosfera. São fundamentais investimentos prudentes e infra-estruturas que pretendam valorizar a ilha pensando no turismo mas sobretudo nos seus habitantes, e que prioritizam o impacto ambiental mais baixo, assim como a preservação, melhoramento e valorização dos ecosserviços e redução da dependência exterior (nomeadamente ao nível das importações).



Turismo: baseado em largas estadias, na qualidade, no repouso, de natureza, tentando reduzir a sazonalidade. O desenvolvimento do turismo não seria em detrimento do bem-estar da população local, e esta poderá desfrutar dos benefícios da actividade turística. O turismo é publicitado com uma campanha focada na criação de um alto nível de fidelidade.

"Tem que trazer uma mais-valia para a população, por um lado, parte, tem que se criar condições dentro da ilha, tem que haver investimento na ilha, mas também tem que haver o outro trabalho de pôr a ilha no mapa." Armando F. Representante da Direcção Regional do Ambiente

Agricultura e pesca: desenvolver um mercado local para evitar ter de importar produtos frescos. Formação dos agricultores na agricultura biológica, produção de alto valor acrescentado e exportação e embalagem de alta qualidade. Produção de alta qualidade destinada à ilha e a uma possível exportação. Adaptação genuína e consciente da filosofia da Reserva da Biosfera e das indicações dos planos regionais. A pesca vai ser gerida prioritizando a conservação e a valorização alternativa do património natural (por exemplo a pesca profissional e o turismo), tentando assim gerar rendimentos alternativos para os pescadores.

"Tem que ser uma agricultura digamos sustentável. Já com uma agricultura vocacionada para a preocupação da preservação. Não utilizar exesivamente os solos, nem os adubos, nem os fertilozantes, tem que ser dada formação aos agricultores nessa área para eles também apreenderem a preservar os recursos ambientais."
Leonor M. Representante de concelho nas Flores

Investimentos chave: os investimentos têm como objectivo desenvolver uma ilha mais verde e sustentável, proporcionando uma qualidade de vida baseada na valorização dos ecossistemas e do ambiente. A população está consciente da necessidade de ter um ambiente mais preservado e modos de vida mais sustentáveis (gestão dos resíduos, preservação de áreas-chave, preservação da paisagem, agricultura sustentável, maior auto-suficiência...). Os investimentos vão ser sempre feitos considerando o impacto ambiental (incremento nos custos) e seguindo a filosofia da Reserva da Biosfera. A possível escola profissional teria como principal objectivo formar profissionais conscientes dos desafios

ambientais. A produção de energia eléctrica será quase 100% renovável e o modelo de produção da ilha será um exemplo de autonomia energética.

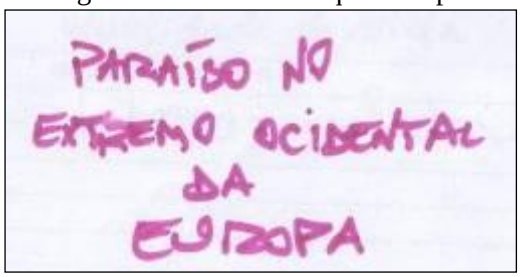
"Recuperação de algum do nosso casario que não podendo ser recuperado pelos proprietários seria apoiado por programas que mais tarde, depois d a sua recuperação, pudessem canalizá-lo para esse turismo..." João Alberto K. Responsável restaurante

"Recolha e triagem de lixo. Não há. É um serviço que pode empregar 10 o 12 pessoas na ilha toda e aumenta a qualidade ambiental de maneira fantástica."
Daniel A. Experto turismo rural

Os serviços de saúde vão-se desenvolver na medida do possível mas é priorizada a aposta num sistema eficiente de evacuação. Um hospital nunca vai fazer sentido na ilha.

"Tem que se apostar numa boa rede de evacuação de transporte de doentes, é muito complicado falarmos em algo muito melhor que um centro de saúde para 4000 habitantes"
Armando F. Representante da Direcção Regional do Ambiente

Estratégia a largo prazo: Preservação do património da ilha (natural e cultural) através de políticas e actividades que os valorizam. Em vez de procurar um crescimento rápido da população este cenário está baseado na manutenção da população e na criação de uma estratégia de crescimento que vai permitir um crescimento populacional equilibrado e sustentável a longo prazo.



Em 2030, a Ilha das Flores será um paradigma de desenvolvimento sustentável; isto atrairá pessoas à procura de um estilo de vida único.

"Um sítio destes podia ser um paradigma para o resto do mundo, tem as condições para isso."
Daniel A. Experto turismo rural

Possível efeito caso este modelo de desenvolvimento não tenha efeitos positivos: o risco é criar um *elefante verde* no meio do Atlântico. A estratégia não consegue parar o decrescimento populacional. A ilha transforma-se num espaço preservado mas vazio.

"...se não o cenário é a ilha com faroleiro e grupos que a visitam, [...] que é um bocado ficção mas é possível, 2030 ou 2050, ou senão tens que incentivar as pessoas de uma forma ou outra"
Luca J. Empreendedor turismo rural

5 Cenários para os Açores 2030 – Perspectivas para a sustentabilidade na Região Autónoma dos Açores:
- A HOTELÂNDIA baseado no desenvolvimento turístico com quatro forças motrizes – a qualidade dos produtos regionais, a qualidade do património natural, a diferenciação do património cultural e os transportes aéreos e marítimos;
- A LACTOGENIA baseado na excelência do desenvolvimento agro-pecuário com as forças motrizes da qualidade dos produtos regionais, do potencial agro-pecuário, dos subsídios e políticas da União Europeia;
- A ECOTOPIA baseado na defesa e valorização do património natural com as forças motrizes dos recursos geotérmicos, da qualidade do património natural, da pressão sobre os recursos naturais e dos riscos geológicos e tectónicos;
- A SOCIOPÓLIS baseado na valorização da coesão social com as forças motrizes da população jovem, das ajudas da União Europeia, da educação;
- A INFOCRACIA baseado na aposta da sociedade da informação com as forças motrizes da posição geo-estratégica, da população jovem, da diáspora açoriana e da Ultraperifericidade.

Fonte: Plano Regional de Ordenamento do Território para a Região Autónoma dos Açores

4.3 - Communication 3

Flores, visões de futuro e desenvolvimento sustentável
Material de apoio à entrevista de análise multi-critério (MCM)

Entre Agosto e Novembro de 2009 foram realizadas 7 reuniões de grupo com a população da Ilha onde se comentaram os dois cenários de desenvolvimento criados para este estudo. Estas reuniões, que permitiram aos participantes reflectir sobre critérios para avaliar os cenários e projectos para a ilha (tabela 2 da página 11), foi a oportunidade para colectar impressões e opiniões que permitiram fazer mudanças nos cenários de desenvolvimento sustentável para as Flores.

O presente documento apresenta os dois cenários desenvolvidos após as reuniões (**Cenário do desenvolvimento standard** e **Cenário do desenvolvimento equilibrado**) e os 5 cenários do PReDSA (**Hotelândia**, **Lactogenia**, **Ecotopia**, **Sociopolis** e **Infocracia**), http://sra.azores.gov.pt/predsa/.

Os contributos dos participantes às reuniões de grupo aparecem em azul sublinhado. Entre parêntesis aparece a primeira letra do grupo e um número que permite identificar o participante que fez o contributo. Os pontos de vista dos participantes foram transcritos no texto da forma mais directa possível.

Foram 5 grupos de diferentes categorias sócio-profissionais: jovens adultos [J] , pescadores [Pe], produtores não agrícolas [P] (só participou uma pessoa), turismo [T] e agricultores [A]. E 2 grupos interdisciplinares, um das Lajes das Flores [L] e outro de Santa Cruz das Flores [S] (só participou uma pessoa). No total participaram 30 florentinos.

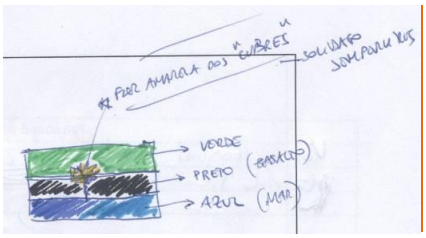
O objectivo de criar estes cenários é a discussão em torno de temas relacionados com o desenvolvimento sustentável da Ilha das Flores. Nas entrevistas multi-critério de Novembro e Dezembro, estes cenários serão avaliados com os cenários do PReDSA. A tabela 1 da página 11 do presente documento apresenta os critérios seleccionados pelos participantes para fazer esta avaliação (o número corresponde às vezes o que critério foi seleccionado).

As entrevistas multi-critério serão realizadas com o apoio de um programa informático, o *MC-Mapper*, www.multicriteria-mapping.org, e permitirão ter uma visão de como "pontua" cada cenário consoante o critério. O entrevistado terá a oportunidade de apresentar os seus próprios cenários para a ilha e os critérios de avaliação, qualificando com uma pontuação máxima e uma pontuação mínima cada critério. As entrevistas permitirão também recolher as opiniões dos entrevistados, sendo isto uma oportunidade para justificar as pontuações dadas.

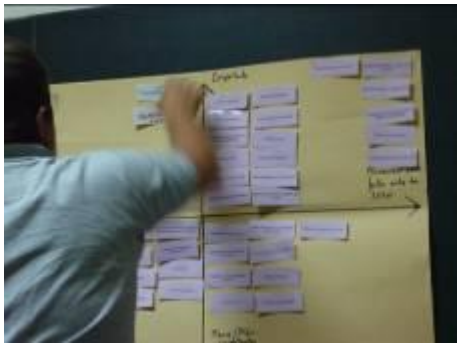
No fim do processo e após a análise dos dados serão divulgados os resultados finais e reflexões em relação à totalidade do processo.

DESENVOLVIMENTO STANDARD

O **cenário do desenvolvimento standard** é o cenário do desenvolvimento através do investimento público em infraestruturas, apostando num sector primário mais intensivo que vai permitir exportar alguns produtos agrícolas (carne de bovino, leite e produtos derivados do leite), num modelo de turismo mais estandardizado (apostando nas oportunidades da ilha mas não priorizando o impacto ambiental mínimo) e na exploração da água com fins comerciais. Em certos aspectos este já é o caminho que se está a seguir [T1], mesmo que o cenário crie certa *"apreensão"* [A2]. Sobretudo o papel da agricultura *"produzir mais e mais, isto também é um pouco agressivo"* [A2]. Mas a ilha precisa de investimento público e este parece um cenário que permite criar mais riquezas, "*o que a gente quer é mais riquezas*" [Pe1] e nem todos os investimentos em infraestruturas deveriam de ter um forte impacto no ambiente [L3], "as pessoas estão muito mais sensibilizadas com as questões ambientais" [L3].



Turismo: É considerado como um dos únicos sectores com futuro, desde que seja efectuada uma importante aposta no turismo, tentando atrair um alto número de turistas, desenvolvendo estruturas convencionais de hotelaria, *"nós precisamos de um turismo de 'massas', onde tu tens o que queres, onde tu tens que proteger o ambiente que temos mas que tivesse qualquer coisa que eu gostava fazer"* [T1] e diminuição do preço das passagens. Forte campanha de comunicação, é preciso divulgar o que a ilha tem [T3], para incrementar o número de visitantes, mas não se trata de massificar o turismo [T], este estraga. Não se considera mercados específicos nem necessariamente o impacto ambiental das actividades e infraestruturas (por exemplo no caso da pesca desportiva, na construção ou do golfe). O turismo rural não parece uma aposta sistematicamente viável, *"reconstruir, renovar... mas depois quando chega a hora da verdade aquilo não se enquadra"* [T2].



"*Se efectivamente houver um desenvolvimento no sentido de melhorar as accesibilidades e os custos dessas acessibilidades penso que as Flores poderão ter ambição de viver muito à custa do turismo"* Francisco T. Organização de apoio ao investimento nas áreas rurais

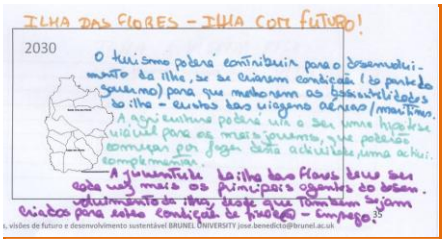
Agricultura e pesca: os agricultores são formados de acordo com o uso de técnicas adaptadas e optimizadas. A sua actividade está mais focalizada na produção eficiente e em estratégias de exportação (de produtos derivados da leite e carne). A agricultura não é necessariamente amiga do ambiente. A exportação requer um sistema produtivo mais intensivo que pode desequilibrar os ecossistemas naturais, existe um perigo de "*descaracterização*"[S1]. Mas por outro lado, já que a agricultura não está tão desenvolvida, *"é possível incrementar a produção e proteger o que temos"* [L1] e "*a produção de carne e leite é bom para a ilha*" [Pe2].

A pesca tem uma orientação produtivista e orientada à exportação, podendo apresentar riscos para certas espécies. A criação de um porto de abrigo em Santa Cruz, o incremento as quotas dos pescadores florentinos e *"melhorar o escoamento do pescado"* [Pe] iria no sentido de apoiar o sector das pescas e incrementar o número de capturas.

"*Eu defendia a laurissilva nas zonas de maior declive e nas zonas mais agrestes onde não é possível ter gado"* Joaquim G. Professor na Universidade dos Açores

Investimentos chave: o investimento vai ter como objectivo atrair mais população (criação de empregos e desenvolvimento de infraestruturas atractivas). Alguns exemplos de possíveis investimentos poderiam ser: melhorar as infraestruturas de transporte para facilitar as exportações e para apoiar o crescimento populacional e do turismo (aeroporto e porto). Melhorar muito a rede de estradas da ilha não é uma necessidade. Projectos de armazenamento, conservação, transformação e exportação de carne e peixe (com selo de qualidade) [T] e projectos de engarrafamento da água da ilha [A&T] iriam também nesse sentido. Incrementar também os serviços de saúde na ilha acompanhando o crescimento da população, e desenvolvendo atractivas (e se calhar sobre-dimensionadas) instalações turísticas. Possível criação de uma escola profissional, adaptada ao tamanho do mercado de trabalho local [J2], com o objectivo de preparar a população nos sectores estratégicos, nomeadamente os focalizados na produtividade.

"*...ilhas como as Flores e outras muito afastadas dos grandes centros são aquelas em que a gente precisa de grandes comunicações e de grandes telecomunicações"* Raúl H. Representante Secretaria Regional da Agricultura



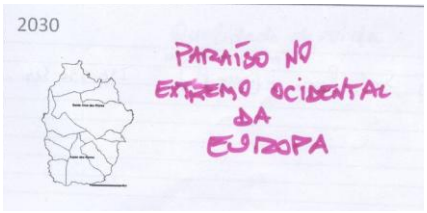
Estratégia a largo prazo: o objectivo é um incremento importante da população invertendo assim a actual tendência. Esforços especialmente realizados na coesão com as outras ilhas, tentando igualar o standard das ilhas maiores. Mas existe um certo nível de desleixo, como por exemplo não se fazerem esforços não produtivos para conservar o património da ilha, que em parte pode ser sacrificado para conseguir os objectivos marcados, também "*todas essas coisas* (construções) *trazem à Ilha das Flores novas pessoas que provavelmente quando acabar vão-se embora*" [P1].

"*...tudo isso dá uma certa animação sócio-económica, promove o comércio, promove a agricultura, promove o desenvolvimento. Porque o que a ilha precissa é de pessoas, só que as pessoas não se fixam lá se não houver economia."* Joaquim G. Professor na Universidade dos Açores

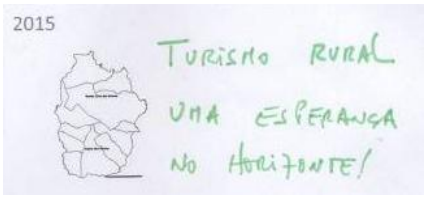
Possível efeito caso este modelo de desenvolvimento não tiver efeitos positivos: se os esforços feitos para desenvolver a ilha não produzirem os resultados esperados: não incremento da população; investimentos fragilizadores da estrutura natural da ilha; aumento da dependência com o exterior. Algumas pessoas afirmam que a ilha já tomou este rumo, certas infraestruturas já criadas estão infrautilizadas [S1] e afirmações como: "*nos já temos um elefante branco*" [T3] e "*as coisas das Flores são feitas fora de sítio*" [T1] levam a pensar isto.

DESENVOLVIMENTO EQUILIBRADO

O **cenário do desenvolvimento equilibrado** é o cenário do desenvolvimento através de altos standards de qualidade ambiental e valorização dos valores próprios associados à própria natureza e vivência da Ilha, apostando por exemplo fortemente no estatuto da Reserva da Biosfera. Neste cenário "*agradecido com o ambiente*" [A2] são fundamentais investimentos prudentes e infra-estruturas que pretendam valorizar a ilha pensando no turismo mas sobretudo nos seus habitantes, e que priorizam o impacto ambiental mais baixo, assim como a preservação, melhoramento e valorização dos eco-serviços e redução da dependência exterior, "*é bom fazer alguma coisa para não estar dependentes do exterior*" [A1] (nomeadamente ao nível das importações). Este cenário, "*tal vez utópico*" [P1], vai precisar de investimentos que se calhar a ilha não tem, mas, em geral, tem sido considerado melhor para a ilha, algumas pessoas acham que a ilha está bem encaminhada para este cenário [L3].



Turismo: baseado em largas estadias, na qualidade, no repouso, na natureza, tentando reduzir a sazonalidade, que "*não hajam muitos* (turistas) *mas que haja qualidade, que tragam bastante dinheiro*" [Pe2]. O desenvolvimento do turismo não seria em detrimento do bem-estar da população local, e esta poderá desfrutar dos benefícios da actividade turística, "*o desenvolvimento do turismo seria após o desenvolvimento do local*" [P1]. O turismo é publicitado considerando que nunca vêm muitas pessoas às Flores e preparando os visitantes a todas as eventualidades (por exemplo frequência das precipitações). Como "*é valorizado o que o local oferece não o que é criado artificialmente*" [L1] a aposta seria no turismo rural que tenta aproveitar as construções antigas, desenvolvendo um plano para este turismo [J2] e incidindo na formação de profissionais do sector [T].



"*Tem que trazer uma mais-valia para a população, por um lado e tem que se criar condições dentro da ilha, tem que haver investimento na ilha, mas também tem que haver o outro trabalho de pôr a ilha no mapa.*" Armando F. Representante da Direcção Regional do Ambiente

Agricultura e pesca: desenvolver um mercado local para evitar ter de importar produtos frescos. Formação e informação dos agricultores na agricultura biológica e na conservação da natureza[A], estes têm a capacidade de certificar os seus produtos como biológicos, produção de alto valor acrescentado e exportação e, ao nível da ilha, generalização das embalagens retornáveis. Produção de alta qualidade destinada à ilha e a uma possível exportação. Adaptação genuína e consciente da filosofia da Reserva da Biosfera e das indicações dos planos regionais, sem ser necessariamente biológica, esta prática "*nunca vai pegar se não em pequeninos locais*"[P1], se for controlada não seria "*inimiga do ambiente*"[J2], é possível alcançar alguns dos objectivos [A1].

A pesca vai ser gerida priorizando a conservação e a valorização alternativa do património natural (por exemplo a pesca profissional e o turismo), tentando assim gerar rendimentos alternativos para os pescadores. Estas alternativas poderiam ser a condição para manter o sector das pescas nas Flores que, orientado ao mercado interno não é preciso maximizar [L1]. Assim, se centra a pesca na conservação e no escoamento efectivo de uma parte do pescado [Pe2], para incrementar os ingressos dos pescadores.

"*Tem que ser uma agricultura digamos sustentável. Já com uma agricultura vocacionada para a preocupação da preservação. Não utilizar excessivamente os solos, nem os adubos, nem os fertilizantes, tem que ser dada formação aos agricultores nessa área para eles também aprenderem a preservar os recursos ambientais.*" Leonor M. Representante de concelho nas Flores

Investimentos chave: os investimentos têm como objectivo desenvolver uma ilha mais verde e sustentável, proporcionando uma qualidade de vida baseada na valorização dos ecossistemas e do ambiente. A população está consciente da necessidade de ter um ambiente mais preservado e modos de vida mais sustentáveis (gestão dos resíduos, preservação de áreas-chave, preservação da

paisagem, agricultura sustentável, maior auto-suficiência...). Os investimentos vão ser sempre feitos considerando o impacto ambiental (incremento nos custos) e seguindo a filosofia da Reserva da Biosfera. O exemplo dos frascos de iogurte retornáveis é generalizado a outros produtos da ilha. A possível escola profissional, adaptada ao tamanho do mercado de trabalho da ilha, teria como principal objectivo formar profissionais conscientes dos desafios ambientais. A criação de um mercado local serviria para distribuir os produtos agrícolas produzidos na ilha [J]. A produção de energia eléctrica seria quase 100% renovável e o modelo de produção da ilha seria um exemplo de autonomia energética.

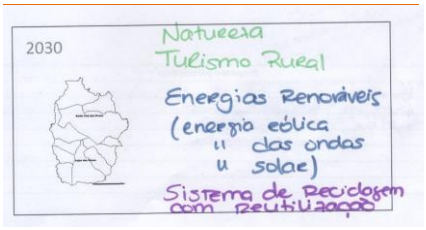
"*Recuperação de algum do nosso casario que não podendo ser recuperado pelos proprietários seria apoiado por programas que mais tarde, depois da sua recuperação, pudessem canalizá-lo para esse turismo...*"João Alberto K. Proprietário de restaurante

"recolha e triagem de lixo. Não há. É um serviço que pode empregar 10 o 12 pessoas na ilha toda e aumenta a qualidade ambiental de maneira fantástica." Daniel A. Técnico turismo rural

Os serviços de saúde vão-se desenvolver na medida do possível mas é priorizada a aposta num sistema eficiente de evacuação. Um hospital nunca vai fazer sentido na ilha.

"*Tem que se apostar numa boa rede de evacuação de transporte de doentes, é muito complicado falarmos em algo muito melhor que um centro de saúde para 4000 habitantes"* Armando F. Representante da Direcção Regional do Ambiente

Estratégia a largo prazo: Preservação do património da ilha (natural e cultural) através de políticas e actividades que os valorizam. Por exemplo "*dar iniciativa aos jovens para reconstruirem as casas em vez de elas ficarem caindo*" [J2]. Em vez de procurar um crescimento rápido da população este cenário está baseado na manutenção da população e na criação de uma estratégia de crescimento que vai permitir um crescimento populacional equilibrado e sustentável a longo prazo. O cenário de desenvolvimento equilibrado "*corresponde com aquilo que seria um desenvolvimento mais sustentável*"[P1].



Em 2030, a Ilha das Flores será um paradigma de desenvolvimento sustentável; isto atrairá pessoas à procura de um estilo de vida único, "*gostava que isto fosse mesmo um paraíso, tem todas as condições para isso*"[P1].

"Um sítio destes podia ser um paradigma para o resto do mundo, tem as condições para isso." Daniel A. Técnico turismo rural

Possível efeito caso este modelo de desenvolvimento não tenha efeitos positivos: mesmo que promova um cenário assim, que "*tem em conta as pessoas*" e "*ao promover estas coisas vai dar muito mais actividade e por isso, isto dificilmente acontece*" [S1], o risco é criar um *elefante verde* no meio do Atlântico. A estratégia não consegue parar o decrescimento populacional. A ilha transforma-se num espaço preservado mas vazio, "*a biodiversidade é importante mas se formos a dar muita importância à biodiversidade, nós vamos virar para o verde, para a paisagem*" [P1].

"*...se não o cenário é a ilha com faroleiro e grupos que a visitam, [...] que é um bocado ficção mas é possível, 2030 ou 2050... ou senão, tens que incentivar as pessoas de uma forma ou de outra"*Luca J. Empreendedor turismo rural

A mais valia da Região resulta do seu património ambiental. A forte presença do mar, a beleza da paisagem, a gastronomia e as tradições formam um conjunto vasto e diversificado de aspectos forças motrizes dominantes de grande riqueza e com um elevado potencial de valorização turística. O caminho do desenvolvimento foi claro: potenciar aquilo que a Região tinha de melhor. Com base neste princípio, o Governo Regional decidiu incentivar o desenvolvimento do sector turístico, procurando ultrapassar os obstáculos ao seu crescimento, sobretudo a quantidade e diversificação da oferta hoteleira e a capacidade de transporte, tanto aéreo como marítimo.

Neste sentido, os processos burocráticos de licenciamento de empreendimentos turísticos foram relativamente atenuados, nomeadamente no que diz respeito aos pareceres de natureza ambiental que, num passado próximo, persistiam em bloquear grande parte dos mesmos em zonas ambientalmente sensíveis. No que diz respeito aos transportes, também se verificaram modificações profundas. Actualmente, existe um conjunto diverso de transportadores aéreos de "baixo custo" a voar para a Região e há, inclusivamente, incentivos por parte das entidades regionais competentes para baixar as tarifas. Hoje em dia pode dizer-se que é pouco dispendioso viajar para e nos Açores.

Com o passar do tempo, a pressão sobre o ambiente (devido ao aproveitamento turístico) tem vindo a acentuar-se um pouco por todas as ilhas mas, sobretudo, em São Miguel e Terceira. Nestas ilhas, não apenas a ocupação do litoral é preocupante - verificando-se obras relativamente recentes já em risco de desmoronamento – mas, inclusivamente, regista-se a construção de empreendimentos hoteleiros em zonas adjacentes às Lagoas das Furnas e das Sete Cidades contrariando, claramente, linhas de orientação anteriormente definidas.

O crescimento económico é notório em relação ao início do século XXI, muito por acção do sector da construção civil, mas também pelas receitas turísticas que começaram a aumentar em larga escala. Por outro lado, no sector da pecuária e lacticínios (que tinha sido a base da economia açoriana na segunda metade do século XX) verifica-se uma estagnação, em parte devido à aposta no turismo. No entanto, o quadro não é totalmente crítico para alguns produtores agrícolas e pecuários, pois começam a surgir iniciativas privadas de sucesso ligadas ao turismo rural, que aproveitam os processos produtivos tradicionais de leite, queijo e carne como atractivo turístico.

Este tipo de iniciativas é exemplo de um tipo de turismo alternativo que tem vindo a crescer (lentamente) nos Açores, fundamentalmente ligado à natureza e ao contacto com o mundo rural. As estadias nas pequenas ilhas (como as Flores e o Corvo) são especialmente apreciadas por este tipo de visitantes, que evitam os grandes centros de concentração turística localizados, sobretudo, em São Miguel e na Terceira, ilhas onde a capacidade de alojamento hoteleiro cresceu exponencialmente e a procura é indiferenciada. Pode assim dizer-se que temos um turismo a duas velocidades, de qualidade e dimensões muito distintas. Em qualquer caso, a sazonalidade turística é hoje reduzida, atendendo aos diferentes tipos de oferta de lazer na Região.

Estamos em 2030 e, apesar da melhoria da qualidade de vida, muitos açorianos preferiam conciliá-la com a noção romântica dos Açores do final do século passado…

Fonte: Perspectivas para a sustentabilidade na Região Autónoma dos Açores – SRAM Açores

A actividade produtiva com maior relevo na Região é a
indústria ligada ao sector da agro-pecuária, em resultado da existência de condições excepcionais para essa actividade. Por esse motivo, o forças motrizes dominantes sector dos lacticínios e da carne é o grande dinamizador da economia açoriana, talvez a única actividade que consegue superar os problemas de economia de escala inerentes a um território fragmentado em nove pequenas ilhas. Com base neste pressuposto, pretendeu-se apostar fortemente no sector, nomeadamente através de incentivos à produção, tanto em qualidade como em quantidade. O crescimento do sector tem sido, em grande parte, condicionado pelo sistema de quotas imposto pela União Europeia, que irá brevemente ser sujeito a nova revisão. Os fundos e quotas atribuídas passarão sobretudo a depender de critérios de qualidade do produto final em detrimento da quantidade. Contudo, a batalha por um aumento das quotas leiteiras nos Açores permanece o principal motor de toda a acção política, conhecendo progressos e retrocessos ao longo dos últimos trinta anos.

Após árduas negociações com o Governo da República e com a União Europeia, conseguiu acordar-se um aumento da produção agro-pecuária de cerca de 50% entre 2025 e 2035. Paradoxalmente, este aumento deveu-se sobretudo aos rigorosos critérios de qualidade exigidos pela União Europeia. A nível europeu dificilmente é possível encontrar produtos lácteos e carne com a qualidade dos produzidos nos Açores, razão que levou a União Europeia a reduzir a quota leiteira de outras regiões europeias em seu benefício. Será um crescimento faseado no tempo, não se pretendendo alterações muito bruscas no funcionamento do sector, mas antes um crescimento sólido e sustentável, no qual a qualidade final do produto seja sempre salvaguardada. Foi uma grande vitória política para os Açores, após tantos anos de duras negociações.

Face a este novo enquadramento, as actividades relacionadas com a a produção agro-pecuária ganham um novo impulso, que se tem reflectido num maior crescimento económico, associado a um aumento do emprego no sector e a um generalizado aumento do poder de compra da população.

A nível social verifica-se uma diminuição da pobreza e exclusão social; no entanto, a nível do sistema educativo não se verificam progressos muito significativos, uma vez que o investimento público na área social tende a estagnar, não sendo essas as prioridades da Região neste momento. As preocupações com a qualidade ambiental, nomeadamente a qualidade da água das lagoas (em São Miguel mas também em outras ilhas) existem mas são insuficientes. Uma efectiva recuperação ambiental das lagoas é, cada vez mais, um problema.

Estamos em 2030 e a economia açoriana depende hoje, quase exclusivamente, da força do sector agro-pecuário e dos lacticínios. Trata-se de uma indústria moderna e rentável, ainda que excessivamente dependente das políticas da União Europeia. Por outro lado, as pressões sobre o património natural são cada vez mais preocupantes, facto que já levou à apresentação de várias queixas na União Europeia…

Fonte: Perspectivas para a sustentabilidade na Região Autónoma dos Açores – SRAM Açores

O reconhecimento da elevada beleza natural e do valor ambiental dos Açores a nível internacional resultou na designação da Região como "Reserva Natural" e, consequentemente, todas as actividades forças motrizes dominantes económicas começaram a ser condicionadas por essa situação. As restrições impostas são não apenas de natureza ecológica, mas também derivadas de uma maior preocupação com a minimização de riscos geológicos. Como consequência destas opções estratégicas, a obtenção de licenças de construção (seja para habitação ou para outro tipo de actividade) é hoje limitada a zonas específicas, muito circunscritas.

A actividade pecuária foi drasticamente afectada com a redução significativa da área destinada a pastagem, no intuito de elimina a poluição difusa de origem agrícola. A pesca tradicional também é hoje alvo de restrições significativas, orientando-se o sector para a aquacultura em alto mar. A actividade turística junto das lagoas e outros locais de alguma sensibilidade ambiental é restrita, sendo as visitas a esse tipo de locais efectuadas mediante autorização prévia, de modo a garantir o controlo do número de pessoas presentes. A actividade de observação de cetáceos e golfinhos também só é possível mediante autorização especial das autoridades.

A fiscalização é muito rigorosa, sendo aplicadas coimas elevadas aos prevaricadores. Por outro lado, está em curso, com o apoio técnico das unidades de investigação e desenvolvimento, um programa de valorização da utilização comercial de espécies endémicas, nomeadamente na produção de essências naturais.

Uma das bandeiras desta política ambiental é a aposta nas energias renováveis. De facto, a electricidade consumida na Região é hoje essencialmente de origem renovável, graças sobretudo ao aproveitamento dos recursos geotérmicos (com uma contribuição de cerca de 80% da produção total de energia). Algumas indústrias, dos mais variados sectores e de diferentes dimensões, têm uma eficiência energética elevada e investiram em processos produtivos baseados em tecnologias não poluentes, graças aos vários incentivos financeiros para esse efeito. Esta parece ser, aliás, a nica solução possível para a viabilidade da indústria açoriana.

Contudo, tem que ser recordado que diversas empresas, optaram pela deslocalização, com consequências a nível do emprego e algumas intenções de investimento proveniente do exterior à Região não se concretizaram, em especial pelas dificuldades em termos de licenciamento industrial e pelo preço dos transportes de mercadorias para o exterior.

Estamos em 2030 e a qualidade ambiental da Região é excelente a todos os níveis, tendo sido resolvidos os principais problemas que eram identificados no início do século. No entanto, as condições económicas e sociais da Região estagnaram, causando algumas preocupações a nível social e, sem dúvida, contribuindo para o aumento da emigração, que volta a ser encarada com a solução para uma melhoria das condições de vida. Por outro lado, começa a emergir um outro tipo de economia, baseada na inovação tecnológica e em indústrias menos poluentes mas não é fácil, neste momento, ter certezas sobre se esta tendência poderá dinamizar o crescimento económico…

Fonte: Perspectivas para a sustentabilidade na Região Autónoma dos Açores – SRAM Açores

"O investimento prioritário deve ser feito nos açorianos; são eles o motor de desenvolvimento da Região". Com base neste princípio fundamental, decidiu-se em primeiro lugar erradicar em definitivo as forças motrizes dominantes situações de exclusão social da Região, aspecto que foi designado como a grande prioridade política e para a qual foi afectada uma fatia considerável do esforço orçamental. Num segundo momento a aposta fundamental foi dirigida às camadas mais jovens da população. Considerou-se que só apostando na educação se conseguiriam alcançar as condições necessárias para um verdadeiro desenvolvimento.

A política de forte investimento na educação foi muito apoiada por fundos comunitários, que actualmente são preferencialmente canalizados para este fim e têm sido realizados investimentos avultados em infra-estruturas escolares. As actividades curriculares são complementadas por actividades de carácter mais lúdico e cultural. Em termos de ensino universitário, também foram desenvolvidos esforços consideráveis, tendo a Universidade dos Açores e outras instituições regionais de índole tecnológica estabelecido fortes parcerias com outras unidades de ensino e investigação, em especial na área dos recursos do mar e nas ciências da terra. Esta estratégia permitiu reforçar um melhor intercâmbio e contacto com a comunidade emigrante, nomeadamente através das novas gerações.

A criação de infra-estruturas de apoio à terceira idade e apoio médico específico tem, também, consumido uma significativa fatia do orçamento regional. Este facto tem contribuído para a imigração e estabelecimento de reformados vindos de outros países comunitários, atraídos pela qualidade do apoio do Estado. É interessante notar que alguns deles têm retomado um certo grau de vida activa, dinamizando algumas iniciativas locais de emprego relativamente inovadoras.

Sabia-se que os resultados práticos desta estratégia só seriam visíveis a longo-prazo, mas foi uma opção política tomada de forma consciente, como uma visão de longo prazo pouco comum. Foram efectuados sacrifícios em termos de aumento de impostos e alguns cortes no apoio financeiro do Estado às actividades económicas, exceptuando o apoio ao emprego qualificado. Tem-se verificado um relativo abrandamento do crescimento económico, ainda que alguns nichos especializados se tenham tornado altamente concorrenciais a nível europeu. A actividade agro-pecuária diminuiu (também devido à nova reforma da PAC) e o turismo mantém-se nos níveis observados no início do século. Alguns empresários ameaçam deslocar os seus negócios para outras Regiões mais favoráveis do ponto de vista fiscal…

A nível ambiental persistem algumas deficiências a nível do saneamento básico, problemas que se têm vindo a arrastar no tempo devido à insuficiente disponibilidade de verbas. Contudo, a nível do ordenamento do território e da eutrofização das lagoas não se verificam situações de significativo agravamento nas últimas décadas, devido ao facto da carga orgânica proveniente da actividade agro-pecuária não ter conhecido grandes alterações.

Pode afirmar-se, por isso, que a pressão sobre os recursos ambientais não tem aumentado de forma significativa. Estamos em 2030 e a situação económica não evidencia ainda de jovens açorianos com habilitações e qualificações é muitíssimo superior ao que se verificava no início do século…

Fonte: Perspectivas para a sustentabilidade na Região Autónoma dos Açores – SRAM Açores

Os Açores encontram-se relativamente isolados do ponto de vista geográfico, condicionando o desenvolvimento da Região e limitando a possibilidade de promover economias de escala. De outro ponto forças motrizes dominantes de vista, os Açores são uma Região privilegiada em termos geoestratégicos para o fortalecimento de relações entre os continentes europeu e americano, pois está situado entre os dois territórios. Mas como estabelecer esta ponte de forma eficaz? A comunidade emigrante nos Estados Unidos da América e Canadá tem certamente um importante papel a desempenhar. Com efeito, os Açores constituem uma realidade social que supera a realidade das nove ilhas, uma vez que existe uma grande comunidade açoriana espalhada pelo mundo, na qual reside uma mais valia social. Neste contexto, considerou-se fundamental potenciar a troca de conhecimento dentro da comunidade, aspecto para o qual as tecnologias de comunicação, (que têm conhecido um desenvolvimento exponencial) são uma oportunidade a explorar.

Foi neste sentido que se promoveu a criação de uma "comunidade digital" de açorianos espalhados pelo mundo, com especial enfoque na América do Norte, em Portugal Continental e, claro, na própria Região. A população jovem açoriana aderiu em massa à iniciativa, que foi crescendo em ritmo acelerado. Foram colocados vários postos TIC (locais de utilização das "Tecnologias de Informação e Comunicação") nas diversas ilhas, através dos quais é possível comunicar em tempo real e onde os jovens auxiliam a entrada dos mais velhos no mundo digital. No entanto, nem todos os açorianos parecem adaptar-se a esta nova realidade (principalmente nas faixas etárias superiores), começando a ganhar contornos um novo tipo de exclusão social. O campus virtual da Universidade dos Açores permitiu assegurar não apenas uma componente de I&D em cada ilha mas, também, uma internacionalização científica da Região. Os diversos instrumentos de e-learning nesta área permitiram assegurar a constituição de um centro de excelência.

A aposta efectuada nas últimas décadas em desenvolvimento aplicado de tecnologias de informação e comunicação tem aberto novos horizontes para a gestão das actividades económicas na Região. O Sistema Turismo Virtual foi uma das iniciativas emblemáticas deste domínio, com o estabelecimento de parcerias entre a Universidade dos Açores, universidades norte-americanas e pequenas empresas locais. Hoje em dia é possível, por exemplo, observar cetáceos e golfinhos em ambiente virtual de grande realismo… sem qualquer tipo de impacte ambiental, definindo um novo rumo para esta actividade turística.

Estamos em 2030 e as novas soluções parecem encerrar em si novos problemas (como por exemplo, as dificuldades de adaptação de alguns estratos sociais às novas realidades). No entanto, perspectiva-se um novo mundo de possibilidades e oportunidades de negócio baseados nas tecnologias e sistemas de comunicação, tendo o isolamento deixado de ser o forte condicionante que constituía no passado…

Fonte: Perspectivas para a sustentabilidade na Região Autónoma dos Açores – SRAM Açores

Anexos

Tabela 1: Critérios para a avaliação multi-critério

Economia	Sociedade	Ambiente
Sustentabilidade agro-pecuária-4	Criação de emprego-4	Gestão dos resíduos-5
Gestão da pesca e a sua sustentabilidade-3	Estilo de vida e saúde-4	Uso sustentável do solo e dos recursos do território-5
Riqueza produzida-3	Situação dos cuidados médicos-4	Biodiversidade-3
Tipologia e rentabilidade do turismo-3	Vida cultural e cultura-2	Utilização adequada da água-3
Gestão da energia-2	Sistema educativo da ilha-2	Contaminação atmosférica produzida na ilha-2
Saúde da actividade empresarial-2	Dinâmica populacional-1	Quantidade e qualidade da água produzida-1
Sustentabilidade e conveniência do sistema de transporte-2	Nível de formação da população-1	Tipologia e perigosidade dos resíduos produzidos-1
Valor acrescentado da produção e produtividade-1	Segurança-1	

(os números correspondem às vezes que os critérios foram seleccionados)

Tabela 2: Projectos propostos pelos participantes nas entrevistas de grupo

Não massificar o turismo J.
Gastronomia (peixe-doces) J.
Parque de campismo ecológico J.
Transportes J.
Publicitar os recursos da ilha J.
Sector primário de qualidade J.
Melhorar o sector das pescas "cota do goraz" Pe.
Zona Industrial nos Vales Pe.
Museu das pescas nas Flores Pe.
Porto de abrigo de St Cruz Pe.
Melhorar o escoamento do pescado Pe.
Direcção Regional das Pescas/Ambiente P.
Criar uma empresa para engarrafar água T.
Desfasamento do monopólio de transportes T.
Melhoria dos transportes escolares (segurança e vigilância) T.
Projecto arma., cons. (...) de carne e peixe, selo de qualidade T.
Gestão sustentável dos resíduos, com sensibilização da população T.
Estudar potencialidades da cana roca e águas das nascentes A.
Zona Industrial nas Lajes L.
Empresa de desporto outdoor L.
Academia de artes S.
Biblioteca S.
Envolver as pessoas na qualidade de vida e nas questões da ilha S.
Teatro S.

4.4 - Research blog, http://flores-visoesdefuturo.blogspot.com/

FLORES, VISÕES DE FUTURO E DESENVOLVIMENTO SUSTENTÁVEL - 2030

Apresentação pública do trabalho de doutoramento sobre as visões de futuro e do desenvolvimento sustentável da Ilha das Flores Autor: José Benedicto Royuela - josebero@yahoo.com

Antes de tudo gostava de agradecer a todos os participantes ao projecto e às pessoas que fizeram que este pudera acontecer!

O PROJECTO

Porquê a Ilha das Flores?
A Ilha das Flores, recentemente nomeada Reserva da Biosfera pela UNESCO, apresenta uma série de desafios em quanto ao seu desenvolvimento. Por esta razão foi realizado um estudo, divido em três fases, sobre as visões de futuro para a Ilha no ano 2030.

Fases do estudo:
A primeira fase de estudo consistiu numa série de entrevistas realizadas nas Flores no de Abril de 2009. Foram entrevistados 23 agentes sociais no total, na Ilha e na Região, com o objetivo de identificar as suas visões para as Flores em 2030. A partir destas visões começaram a desenvolver-se dois cenários para as Flores em 2030.

Numa segunda fase, estes cenários, que iremos chamar de DESENVOLVIMENTO STANDARD e de DESENVOLVIMENTO EQUILIBRADO foram discutidos e analisados em reuniões de grupo realizadas entre Setembro e Outubro de 2009. Foram realizadas 7 reuniões, com um total de 30 participantes. Estas reuniões permitiram incorporar as perspectivas da população local às visões identificadas nos agentes sociais.

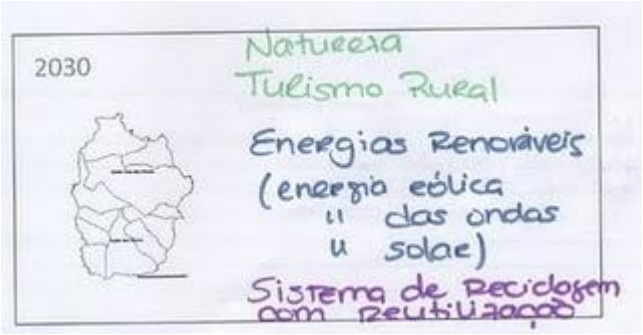
Finalmente, numa terceira fase, que decorreu em Novembro e Dezembro de 2010, os agentes sociais foram novamente entrevistados. Foi solicitado a cada um deles uma avaliação dos dois cenários definidos para a

ilha e de mais cinco cenários previamente desenvolvidos pela SRAM para o conjunto da Região (cenários do PReDSA), em função de uma série de critérios definidos previamente nas reuniões de grupo junto da população local.

CENÁRIOS PARA A ILHA, desenvolvidos no contexto do estudo

Os contributos da população local, reuniões de grupo, aparecem em azul.

O Cenário do DESENVOLVIMENTO STANDARD é o cenário do desenvolvimento através do investimento público em infraestruturas, apostando num sector primário mais intensivo que vai permitir exportar alguns produtos agrícolas (carne de bovino, leite e produtos derivados do leite), num modelo de turismo mais estandardizado (apostando nas oportunidades da ilha mas não priorizando o impacto ambiental mínimo) e na exploração da água com fins comerciais. Em certos aspectos este já é o caminho que se está a seguir, mesmo que o cenário crie certa "*apreensão*". Sobretudo o papel da agricultura "*produzir mais e mais, isto também é um pouco agressivo*". Mas a ilha precisa de investimento público e este parece um cenário que permite criar mais riquezas, "*o que a gente quer é mais riquezas*" e nem todos os investimentos em infraestruturas deveriam de ter um forte impacto no ambiente, "*as pessoas estão muito mais sensibilizadas com as questões ambientais*". Algumas pessoas afirmam que a ilha já tomou este rumo, certas infraestruturas já criadas estão infra-utilizadas e afirmações como: "*nos já temos um elefante branco*" e "*as coisas das Flores são feitas fora de sítio*" levam a pensar isto.



"Se efectivamente houver um desenvolvimento no sentido de melhorar as accesibilidades e os custos dessas acessibilidades penso que as Flores poderão ter ambição de viver muito à custa do turismo"
Francisco T. Organização de apoio ao investimento nas áreas rurais

"...tudo isso dá uma certa animação sócio-económica, promove o comércio, promove a agricultura, promove o desenvolvimento. Porque o que a ilha precissa é de pessoas, só que as pessoas não se fixam lá se não houver economia."
Joaquim G. Professor na Universidade dos Açores

O Cenário do DESENVOLVIMENTO EQUILIBRADO é o cenário do desenvolvimento através de altos standards de qualidade ambiental e valorização dos valores próprios associados à própria natureza e vivência da Ilha, apostando, por exemplo, fortemente no estatuto da Reserva da Biosfera. Neste cenário, "agradecido com o ambiente", são fundamentais investimentos prudentes e infra-estruturas que pretendam valorizar a ilha pensando no turismo mas, sobretudo, nos seus habitantes, e que priorizam o impacto ambiental mais baixo, assim como a preservação, melhoramento e valorização dos eco-serviços e redução da dependência exterior, "é bom fazer alguma coisa para não estar dependentes do exterior" (nomeadamente ao nível das importações). Este cenário, "tal vez utópico", vai precisar de

investimentos que se calhar a Ilha não tem, mas, em geral, tem sido considerado melhor para a Ilha, algumas pessoas acham que a ilha está bem encaminhada para este cenário.Mesmo que promova um cenário assim, que "tem em conta as pessoas" e "ao promover estas coisas vai dar muita mais actividade e por isso, isto dificilmente acontece", o risco é criar um elefante verde no meio do Atlântico.

"Tem que ser uma agricultura digamos sustentável. Já com uma agricultura vocacionada para a preocupação da preservação. Não utilizar excessivamente os solos, nem os adubos, nem os fertilizantes, tem que ser dada formação aos agricultores nessa área para eles também aprenderem a preservar os recursos ambientais."
Leonor M. Representante de Concelho nas Flores

"Um sítio destes podia ser um paradigma para o resto do mundo, tem as condições para isso." Daniel A. Técnico turismo rural

CENÁRIOS DO ESTUDO DE BASE DO PReDSA, propostos para a região

A **HOTELÂNDIA** baseado no desenvolvimento turístico com quatro forças motrizes – a qualidade dos produtos regionais, a qualidade do património natural, a diferenciação do património cultural e os transportes aéreos e marítimos;
A **LACTOGENIA** baseado na excelência do desenvolvimento agro-pecuário com as forças motrizes da qualidade dos produtos regionais, do potencial agro-pecuário, dos subsídios e políticas da União Europeia;
A **ECOTOPIA** baseado na defesa e valorização do património natural com as forças motrizes dos recursos geotérmicos, da qualidade do património natural, da pressão sobre os recursos naturais e dos riscos geológicos e tectónicos;
A **SOCIOPÓLIS** baseado na valorização da coesão social com as forças motrizes da população jovem, das ajudas da União Europeia, da educação;
A **INFOCRACIA** baseado na aposta da sociedade da informação com as forças motrizes da posição geo-estratégica, da população jovem, da diáspora açoriana e da Ultraperifericidade.

Fonte: PROTA

CRITÉRIOS UTILIZADOS PARA A AVALIAÇÃO DOS CENÁRIOS

Os cenários foram avaliados seguindo uma metodologia chamada *Multi-Criteria Mapping* (desenvolvida por Andy Stirling) , esclarecimentos sobre a metodologia seguida em Outros-Notas metodológicas. Nas entrevistas, realizadas com a ajuda de um programa informático, o *MC-Mapper*, os agentes sociais entrevistados tiveram que dar uma nota máxima e uma mínima a cada um dos cenários em relação aos seguintes critérios:

Critérios Económicos:

- Sustentabilidade agro-pecuária
- Gestão da pesca e a sua sustentabilidade
- Riqueza produzida
- Tipologia e rentabilidade do turismo
- Gestão da energia
- Saúde da actividade empresarial
- Sustentabilidade e conveniência do sistema de transporte
- Incentivos governamentais
- Desenvolvimento artesanal

Critérios Sociais

- Criação de emprego
- Estilo de vida e saúde
- Situação dos cuidados médicos
- Vida cultural e cultura
- Sistema educativo da ilha
- Dinâmica populacional (demografia)
- Reintegração da população
- Exclusão social

Critérios ambientais

- Gestão dos resíduos
- Uso sustentável do solo e dos recursos do território
- Biodiversidade
- Utilização adequada da água
- Contaminação atmosférica produzida na ilha
- Paisagem
- Envolvimento da população
- Protecção da área marinha

Após a primeira fase de análise, o programa permitiu criar um gráfico geral onde se pode observar qual foi a avaliação geral dos diferentes cenários.

RESULTADOS PRELIMINARES **(gráfico geral)**

As entrevistas de avaliação multi-critério realizadas aos agentes sociais permitiram perceber melhor quais são as suas perspectivas sobre o desenvolvimento das Flores. Os dados estão ainda a ser analisados, mas os trabalhos preliminares já permitiram apresentar uma gráfico resumo que sintetiza os pontos de vista dos entrevistados em relação aos cenários.

Dos dois cenários identificados para a Ilha das Flores em 2030 pode-se observar que o cenário que apresenta um melhor nível de sucesso é o do **Desenvolvimento Equilibrado**. Este cenário apresenta também a nota mínima mais alta, o que significa que, no pior dos casos, seria menos negativo que o cenário de Desenvolvimento Equilibrado. Em relação os cenários do PReDSA, considerados *a priori* irrealizáveis já que são demasiado contrastados, os que se valorizaram melhor foram o Ecotopia (baseado no património natural) e o Hotelândia (desenvolvimento turístico). Os cenários Sociopolis (factores sociais) e Infocracia (sociedade da informação) tiiveram uma valoração positiva menor. Em quanto que o cenário da Lactogenia, baseado no desenvolvimento da agro-pecuária, parece ser o menos interessante para a ilha e o que seria mais negativo no caso deste tipo de desenvolvimento pudesse ser realizado mas não correra bem.

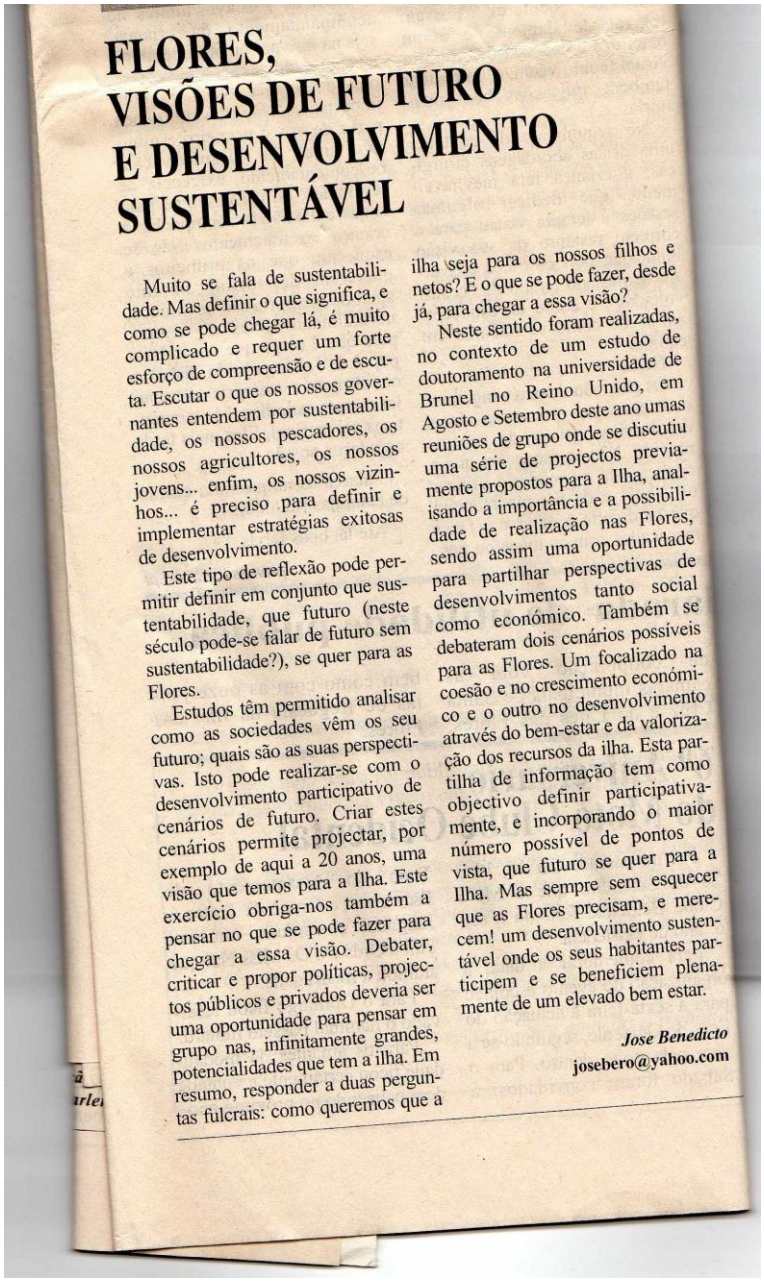
Para além da identificação dos diferentes cenários, e apesar de ainda nos encontrarmos numa primeira fase de analise do projecto, este estudo tem permitido observar que existe uma valorização mais positiva em relação com os cenários diversificados, aqueles que baseiam o desenvolvimento na valoração das especificidades da ilha e na conservação dos valores naturais. Estes cenários são também os que apresentam menor risco associado, o seja, na pior das hipóteses seriam menos negativos para a ilha. O presente estudo encontra-se na última fase de implementação. Ainda falta realizar muito trabalho de análise, mas este Blog pretende ser uma ferramenta para a divulgação do projecto e os seus resultados. A última acção no âmbito deste projecto, será a realização na ilha, nos próximos meses, de um Workshop de encerramento. Nele os Agentes sociais e os participantes nas reuniões de grupo poderão discutir as suas perspectivas e analisar os resultados do projecto. Também será uma oportunidade para identificar possíveis acções para atingir essas visões de futuro para a Ilha.

Para esta última reunião gostaria e convidar a todos os Florentinos!

Espero que este trabalho possa contribuir para o desenvolvimento sustentável da Ilha das Flores. Poderão contactar-me no email: josebero@yahoo.com ou josebero23@gmail.com para quaisquer questões em relação ao presente trabalho.

Saudações Florentinas!

4.5 - The project in the local and regional press



FLORES, VISÕES DE FUTURO E DESENVOLVIMENTO SUSTENTÁVEL

Muito se fala de sustentabilidade. Mas definir o que significa, e como se pode chegar lá, é muito complicado e requer um forte esforço de compreensão e de escuta. Escutar o que os nossos governantes entendem por sustentabilidade, os nossos pescadores, os nossos agricultores, os nossos jovens... enfim, os nossos vizinhos... é preciso para definir e implementar estratégias exitosas de desenvolvimento.

Este tipo de reflexão pode permitir definir em conjunto que sustentabilidade, que futuro (neste século pode-se falar de futuro sem sustentabilidade?), se quer para as Flores.

Estudos têm permitido analisar como as sociedades vêm os seu futuro; quais são as suas perspectivas. Isto pode realizar-se com o desenvolvimento participativo de cenários de futuro. Criar estes cenários permite projectar, por exemplo de aqui a 20 anos, uma visão que temos para a Ilha. Este exercício obriga-nos também a pensar no que se pode fazer para chegar a essa visão. Debater, criticar e propor políticas, projectos públicos e privados deveria ser uma oportunidade para pensar em grupo nas, infinitamente grandes, potencialidades que tem a ilha. Em resumo, responder a duas perguntas fulcrais: como queremos que a ilha seja para os nossos filhos e netos? E o que se pode fazer, desde já, para chegar a essa visão?

Neste sentido foram realizadas, no contexto de um estudo de doutoramento na universidade de Brunel no Reino Unido, em Agosto e Setembro deste ano umas reuniões de grupo onde se discutiu uma série de projectos previamente propostos para a Ilha, analisando a importância e a possibilidade de realização nas Flores, sendo assim uma oportunidade para partilhar perspectivas de desenvolvimentos tanto social como económico. Também se debateram dois cenários possíveis para as Flores. Um focalizado na coesão e no crescimento económico e o outro no desenvolvimento através do bem-estar e da valorização dos recursos da ilha. Esta partilha de informação tem como objectivo definir participativamente, e incorporando o maior número possível de pontos de vista, que futuro se quer para a Ilha. Mas sempre sem esquecer que as Flores precisam, e merecem! um desenvolvimento sustentável onde os seus habitantes participem e se beneficiem plenamente de um elevado bem estar.

Jose Benedicto
josebero@yahoo.com

As Flores – 24th of September 2009 (Flores Island)

Que futuro para as Flores?

por José Benedicto (*)

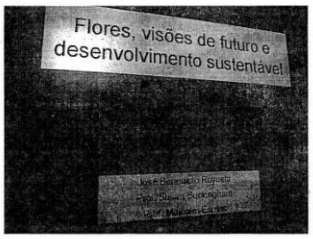
Durante os meses de Agosto e Setembro deste ano foram realizadas na ilha uma série de reuniões de grupo inseridas no trabalho de investigação intitulado: **Flores, visões de futuro e desenvolvimento sustentável**. Estas reuniões tinham como objectivo reflectir sobre as perspectivas de futuro para as Flores. Estas perspectivas variam de pessoa a pessoa, por isso quando se discutem planos de desenvolvimento, para um país, uma região, um vale ou, mesmo, uma ilha, é importante escutar as opiniões de outrem e tentar apreender dessas visões e tentar encontrar um caminho de desenvolvimento onde os habitantes do local (e as futuras gerações!) vêm a sua qualidade de vida melhorar.

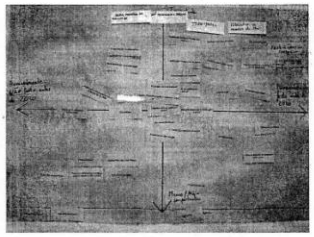
Fazer este tipo de estudos numa ilha como as Flores é interessante porque permite compreender no conjunto a totalidade do seu funcionamento e dos ciclos internos. Em muitos aspectos as ilhas funcionam como continentes em pequeno, por isso são relevantes para a ciência. Se podem monitorizar os elementos do seu sistema económico e social e ver como afectam ao ambiente, à economia e/ou à sociedade. Por exemplo se pode analisar o ciclo dos produtos que entram na ilha: da fabricação (qual é o impacto ambiental da produção da totalidade dos bens consumidos na ilha?), a viajem de barco ou de avião (frequência de transportes, condicionamento...), a distribuição, a utilização e o fim de vida dos bens (... lixeiras ou a reciclagem?).

Pensar nos futuros possíveis para a ilha não tem como objectivo decidir como se tem que desenvolver a ilha. Esta tarefa é tão difícil! Depende de tantos factores independentes ou interligados, internos ou externos, de tantos agentes públicos e privados! Mas permite reflectir conjuntamente em como é que poderiam ser as Flores e que tipo de políticas ou projectos parecem mais aconselhados para construir uma ilha mais sustentável. Assim o *"laboratório ilha"* pode servir de exemplo para outras áreas. Como diria um responsável regional do turismo, as Flores podiam "ser um paradigma para o resto do mundo, tem as condições para isso". Um bom exemplo disto é a recente declaração da Ilha como Reserva da Biosfera pela UNESCO, se isto não é uma prova do seu valor e das suas potencialidades...!

As reuniões de Agosto e Setembro foram uma

oportunidade para, por um lado, reflectir sobre a importância e a viabilidade de uma série de projectos. Estes projectos, muito variados e relativos a quase todos os aspectos da actividade humana nas Flores, foram previamente propostos por agentes sociais, a análise em grupo permitiu ver como são percebidos pela população local e permitiu identificar quais podem ser realizados nas Flores (pelos poderes políticos e, directamente, pela população local). Por exemplo falou-se da importância de fiscalizar as pescas, da possibilidade de produzir fruta tropical com alto valor acrescentado, da viabilidade de ter veículos eléctricos, de desenvolver as infraestruturas... os participantes também propuseram projectos, como por exemplo a criação de um Museu das Pescas nas Flores e publicitar os recursos da ilha para atrair turistas e impulsar a exportação dos produtos locais.





Na segunda fase das reuniões, os participantes reflectiram sobre dois cenários desenvolvidos para as Flores e que tentaram apresentar duas vias de desenvolvimento. Isto permitiu definir que visão se tem da ilha de aqui a 20 anos e como se deseja que a ilha seja num futuro não tão longe. Este desenvolvimento depende em parte de factores externos, tais como a tecnologia, que são difíceis de controlar na ilha, mas que é importante tentar analisar para evitar tomar um rumo não desejado e que possa comprometer o bem estar, presente ou futuro. Os dois cenários estudados pretendiam fazer reflectir sobre dois rumos de desenvolvimento. Um onde se pretende que a ilha, atravesse um crescimento mais convencional, se assemelhe às ilhas maiores do arquipélago, mas correndo o risco de estragar parte da riqueza da ilha. O segundo onde se tenta valorizar a riqueza da ilha, os seus "valores próprios", tomando o risco de apostar em projectos mais inovadores mas que, se ganhadores, aportariam uma maior estabilidade à actividade humana na ilha. Se o perigo do primeiro cenário é criar um '*elefante branco*' o perigo do segundo seria criar um '*elefante verde*'. Provavelmente o secreto de umas Flores mais *férteis* reside em encontrar o equilíbrio entre estas duas visões. Isto tem mais probabilidades de acontecer, ou acontecerá melhor!, com a participação, a implicação e o espírito empreendedor do conjunto da população local.

(*) José Benedicto, economista, natural de Valencia, Espanha, visitou por primeira vez os Açores em 2006 quando fez um estágio no LIFE Priolo. Esta experiência permitiu-lhe fazer um doutoramento na Universidade de Brunel, na Inglaterra, sobre sustentabilidade. Ali decidiu fazer um projecto de investigação sobre o desenvolvimento sustentável da Ilha das Flores, o trabalho na ilha está a decorrer desde o mês de Agosto até Dezembro deste ano. À semelhança de muita gente que embora não natural das Flores, mas que optaram por viver cá ou aqui passar férias, José Benedicto está preocupado com o futuro da última escolha para Reserva da Biosfera. Contacte o autor deste trabalho através do email: josebero@yaoo.com.

O Monchique – 30th of September 2009 (Flores Island)

"FLORES, VISOES DE FUTURO E DESENVOLVIMENTO SUSTENTAVEL"

Na sequência do trabalho de investigação "Flores, visões de futuro e desenvolvimento sustentável", a decorrer desde o mês de Maio de 2009 na Ilha, apresento um gráfico que resume a avaliação feita dos cenários de desenvolvimento estudados.

Os cenários analisados foram o Desenvolvimento Equilibrado, o Desenvolvimento Standard, desenvolvidos especificamente para a Ilha no contexto deste estudo e em base a uma série de entrevistas a agentes sociais e população local; e os cenários da Hotelândia, da Lactogenia, da Ecotopia, da Sociopolis e da Infocracia desenvolvidos pela região no contexto do PReDSA.

Antes de explicar o gráfico resumo é importante compreender como foram feitas as entrevistas. Para cada um dos 7 cenários os entrevistados (19 agentes sociais no total) tiveram que dar uma nota mínima e uma máxima em relação ao desempenho consoante 15 critérios diferentes. Significando a nota máxima o desempenho do cenário em relação a um critério específico no melhor dos casos (visão optimista) e a mínima no pior dos casos (visão pessimista). Os critérios de avaliação foram 5 económicos, 5 sociais e 5 ambientais; os entrevistados eram livres de incrementar outros considerados relevantes. A suma da totalidade dos resultados permitiu criar o gráfico aqui apresentado.

No gráfico observa-se que dos dois cenários desenvolvidos para a Ilha, Desenvolvimento Equilibrado e Desenvolvimento Standard, o Equilibrado é melhor valorizado. Este cenário tem a nota máxima mais alta e a mínima também mais alta. Isto significa que, no conjunto dos critérios, por um lado poderia ter o melhor grado de desempenho e, por outro lado, mesmo se este tipo de desenvolvimento não corresse bem, seria o cenário que desempenharia melhor, ou seria menos perigoso para a ilha.

Dos cenários do PReDSA os mais positivos seriam o Ecotopia e o Hotelândia. O Lactogenia, desenvolvimento baseado principalmente na indústria do leite, apresenta maior risco (pontuação mínima e máxima mais baixas). É importante dizer que os agentes sociais consideravam que nenhum destes cenários é realizável já que se baseiam em modelos de desenvolvimento muito contrastados e centrados num só sector de actividade.

Com tudo o mais importante é constatar a preferência por cenários de desenvolvimento diversificados que valorizam e preservam os recursos naturais da Ilha.

O blogue: *flores-visoesdefuturo.blogspot.com* apresenta de forma mais detalhada os diferentes cenários e a metodologia seguida no estudo. Este blogue vai ser actualizado à medida do avanço da análise dos dados.

Uma reunião de encerramento irá a decorrer no mês de Agosto ou Setembro. Esta reunião, onde participarão tanto os agentes sociais como os habitantes da ilha, será a oportunidade de discutir em grupo os resultados do trabalho e partilhar as experiências e as ideias para o desenvolvimento sustentado da ilha. Sendo este o objectivo final do trabalho.

Mais uma vez muito obrigado pelo interesse posto no trabalho e especialmente às pessoas que participaram activamente nele.

José Benedicto
josebero@yahoo.com

Atenção

Este ano, por motivos pessoais da directora, o mês de férias do Jornal ocorreu no passado mês de Abril, pelo que no Verão estaremos em funcionamento.

Pedimos desculpa aos nossos leitores e assinantes por não o termos avisado com antecedência.

Mais se informa que o prazo para pagamento das assinaturas foi prorrogado até ao final do mês de Junho, para permitir às pessoas que ainda não o fizeram, possam faze-lo sem quaisquer encargos adicionais.

As Flores – 27th of May 2010 (Flores Island)

Estratégias para desenvolvimento sustentado da ilha das Flores estão a ser estudadas por espanhol

Doutoramento está a ser realizado numa universidade do Reino Unido

POR MARCO HENRIQUES

Um jovem universitário espanhol, José Benedicto, está a estudar para um doutoramento na Brunel University, no Reino Unido.

Até aqui pode ser algo comum, ou nem tanto, mas este jovem de 29 anos decidiu que o seu objecto de estudo seria encontrado nos Açores, nomeadamente uma das que o constituem este arquipélago, as Flores.

O "Diário dos Açores" foi ao encontro deste estudioso que nesta altura está a "digerir" diversa matéria recolhida no terreno para explicar algumas considerações sobre o projecto socioeconómico desta ilha. Na entrevista realizada conheça algumas das estratégias para um desenvolvimento sustentado postas em prática por José Benedicto.

Diário dos Açores (DA) - Nome, idade, naturalidade e ocupação?

José Royuela(JR)- Sou José Benedicto tenho 29 anos, sou natural de Valencia em Espanha. Estou a estudar para o doutoramento na Universidade de Brunel (Brunel University, www.brunel.ac.uk) no Centro de Geografia Humana (Human Geography Centre.

DA - Como surgiu esta ideia de fazer este doutoramento sobre uma ilha da Região? Já visitou os Açores e concretamente as Flores mais que uma vez?

JR - Já tinha morado nos Açores antes de começar o doutoramento. Cheguei a São Miguel em Novembro de 2006 para trabalhar no LIFE Priólo com uma bolsa de estagiar (Leonardo), fiquei no Nordeste quase um ano e meio. O trabalho consistia em estudar o impacto socioeconómico do projecto na ilha.

Comecei o doutoramento em Abril de 2008 na Universidade de Brunel sem nenhum tema predefinido. Após os primeiros meses de preparação do projecto de investigação decidi trabalhar sobre a relação entre as áreas protegidas e a população que vive perto ou nelas. Uma das opções eram os Açores porque já as conhecia bem, por causa da importância do património natural e porque gosto muito destas ilhas. Outra razão era que queria trabalhar com cenários de desenvolvimento, por exemplo: como é que as pessoas imaginam a ilha em 20 anos e como é que se poderia chegar lá? A SRAM desenvolveu um relatório chamado Perspectivas para a Sustentabilidade na Região Autónoma dos Açores (desenvolvido no contexto do PReDSA e publicado em 2006) onde se fazia algo parecido só que eu tratei de ir além ao propor uma metodologia onde os cenários eram desenvolvidos mais especificamente para cada ilha.

Em Agosto de 2008 tive a oportunidade de passar alguns dias nas Flores e decidi fazer o trabalho sobre a Ilha. Foi em grande parte porque gostei muito da ilha e porque correspondia com os objectivos do meu trabalho. A beleza da ilha ajuda para trabalhar já que é inspiradora e é um prazer poder desfrutar dum sítio tão enigmático, belo e poético.

O tamanho da Ilha permitiu-me trabalhar sobre a totalidade da ilha e não só nas áreas protegidas.

O trabalho de campo teve lugar em Abril 2009 e de Agosto até Dezembro de 2009 e tive a oportunidade de conhecer bem a ilha nessa altura (também deu para visitar o Corvo, claro!).

DA - Qual a "relação" que tem com a ilha das Flores?

JR - A minha relação com a ilha é dupla, por um lado é "emocional" já que gosto muito da vida na ilha e dos florentinos. E por outro lado é académica.

Quando se visita a ilha e se conhecem as diferentes freguesias e paisagens percebe-se porque as Flores têm dado tantos escritores.

DA - Ao que sei já apresentou algum do seu trabalho sobre as Flores fora de Portugal. Qual a receptividade?

JR- Os Açores ainda são pouco conhecidos fora de Portugal e dá sempre jeito ter um mapa perto para mostrar onde é que estão. Isso já é suficiente para surpreender muita gente. Depois quando explico o meu trabalho e falo da Ilha das Flores e dos diferentes factores a considerar no seu desenvolvimento e como é que o meu trabalho se insere nessa realidade as pessoas ficam fascinadas e interessadas. As Ilhas são sítios de sonho mas também são interessantes para perceber como é que se pode conseguir ter desenvolvimento sustentável, nesse aspecto são pequenos 'laboratórios' onde se pode criar e desenvolver ideias, onde se pode experimentar e onde as comunidades podem facilmente participar.

Do ponto de vista académico acham a metodologia e o caso de estudo interessantes; também é certo que dão sempre conselhos para melhorar tais ou tais aspectos, isso demonstra que têm interesse, creio eu...

DA- Fale-nos um pouco sobre este trabalho. Como está a ser desenvolvido, que conclusão nos pode adiantar já?

JR - Os cenários do PReDSA (Hotelândia, Lactogenia, Ecotopia, Sociopolis e Infocracia) foram utilizados como ponto de partida da análise nas entrevistas a 24 agentes sociais da ilha e da região. Estas entrevistas permitiram criar dois cenários para a ilha das Flores: o cenário de Desenvolvimento Standard e o cenário do Desenvolvimento Equilibrado. Numa segunda fase, 7 grupos de habitantes da ilha comentaram os cenários e deram os seus contributos. Esta informação permitiu criar dois cenários finais. Estes (mais os cinco do PReDSA) foram finalmente analisados pelos agentes sociais numa entrevista de análise multi-critério, pelo método do Multi-criteria mapping.

Ainda estou numa fase de análise dos dados, o trabalho de campo deu para recolher muita informação e não é fácil decidir como é que vou 'digerir' tanto material! Até agora os resultados preliminares demonstraram que dos dois cenários desenvolvidos para a ilha o preferido pelos inquiridos foi o cenário de Desenvolvimento Equilibrado que se baseia essencialmente na utilização dos recursos próprios da ilha para o consumo interno, a produção de produtos de qualidade com certificação (por exemplo da Reserva da Biosfera ou de agricultura biológica). É interessante ver que as pessoas valorizam e percebem o interesse de preservar o património natural e é bom constatar que já estão bastante sensibilizadas com a necessidade de ter um desenvolvimento sustentável. Também é lógico ver que não querem que a sua ilha não se desenvolva nem se modernice. O desafio consiste em saber valorizar os patrimónios naturais e culturais para preservá-los mas também para criar riquezas e emprego. Os governos e os particulares têm que ver que estratégias de desenvolvimento são mais favoráveis; nesse contexto é que se insere o meu trabalho, tentar facilitar a troca de informação e o debate.

Estes cenários estão bem melhor explicados no blogue: flores-visoesdefuturo.blogspot.com

O projecto também permitiu aplicar de forma inovadora o método de análise multi-critério, Multi-criteria mapping. Este último deu bons resultados na medida em que favoreceu a discussão em torno as diferentes opções de desenvolvimento.

No projecto a participação pública e a partilha de informação é a chave. Nessa lógica divulguei o meu trabalho e parte dos resultados na imprensa local, jornais "O Monchique" e "As Flores", o blogue: ailhadasflores.blogspot. com e criei o meu próprio blogue: flores-visoesdefuturo.blogspot. com.

Períodos de céu muito nublado com boas abertas, tornando-se encoberto. Vento noroeste moderado (20/30 km/h), rolando para sueste e enfraquecendo (05/12 km/h).

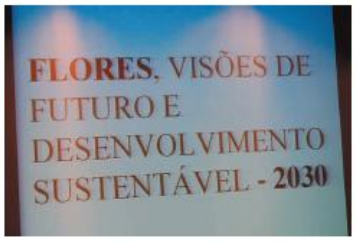
ESTADO DO MAR: Mar de pequena vaga, tornando-se encrespado. Ondas noroeste de 3 metros.

LUAS HOJE AMANHÃ Nova Fase: 10-05-11 | Preia-mar: 05:19 e 17:45 | Baixa-mar: 11:21 | Nascimento do sol: 06:48 | Ocaso: 20:50

Diário dos Açores – 8th of May 2011 (Azores)

Como será a ilha das Flores em 2030

Visões de Futuro e desenvolvimento sustentável



Imagine a ilha das Flores em 2030. Foi procurando encontrar respostas para este cenário que José Benedicto Royuela, aluno da Brunel Universty of Londres, jovem espanhol que se deixou encantar pela ilha das Flores nos últimos anos, preparou a sua tese de doutoramento. Traçou dois quadros mais abrangentes: um tendo em vista o desenvolvimento equilibrado, de alguma forma mais utópico, com um olhar amigo para o ambiente que nos rodeia, outro de desenvolvimento standard que permite criar maior riqueza, mas que provavelmente terá maior impacto na natureza. Pelo meio outros cinco cenários não menos abrangentes, tendo em conta setores que achou serem chaves para o sucesso na ilha. Perante estas ideias chave, o jovem espanhol foi à procura de respostas junto de uma amostra de pessoas ligadas a vários setores da ilha, trabalho esse que foi desenvolvendo ao longo das férias que foi passando nas Flores. Foi esse trabalho que agora apresentou no Centro de Interpretação Ambiental do Boqueirão, durante o programa ***Açores Entre Mares*** que a Secretaria Regional do Ambiente desenvolveu entre 20 de maio a 8 de junho e que para além deste trabalho incluiu também atividades de limpeza da costa, passeios pedestres, palestras e fotografia.

O trabalho procurou dar respostas nos vários cenários apresentados, ouvindo as pessoas e tentando encontrar para cada um deles um cenário possível. Foram contributos na área do turismo, do setor primário de qualidade, da diversificação económica, da formação e participação, da autossuficiência, sem esquecer a conservação da natureza.

O trabalho realça por exemplo que na área do turismo deve evitar-se a massificação do setor e que se deverá planificar; na agricultura que se deve desenvolver, procurando a autossuficiência, reduzindo as importações e procurando incrementar a qualidade dos produtos; na pesca se deverá incrementar a fiscalização e implementar reservas marinhas à volta da ilha; na energia deverá apostar-se na autossuficiência; no emprego e diversificação económica, deverá apostar-se na criação do emprego e fixação de jovens à ilha e finalmente na conservação da natureza, deverá apostar-se na gestão dos resíduos, mudando também os hábitos da população.

No atual quadro que atravessamos e cujo quadro de crise europeia ainda não era tido em conta quando o trabalho foi desenvolvido, os cenários traçados não deixam de ser otimistas. Resta saber se em 2030, daqui a apenas 18 anos, a idade que todos ansiamos quando somos adolescentes, os que por aqui andarem poderão dizer o mesmo. Para já sabe-se que uma parte do futuro desta terra, depende da participação de todos enquanto comunidade.

O Monchique – 29th of June 2012 (Flores Island)

5 - MCM CHARTS:

5.1 - **MCM individual maps**

5.2 - **Weighted scores for the different issues**

5.3 - **Comparative scores for Standard development and Balanced development scenarios**

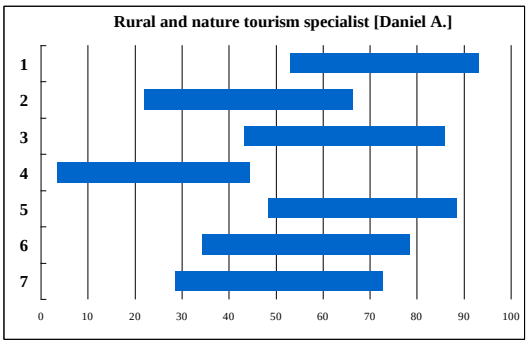
5.4 - **Relative uncertainty for all participants and broken up into issues**

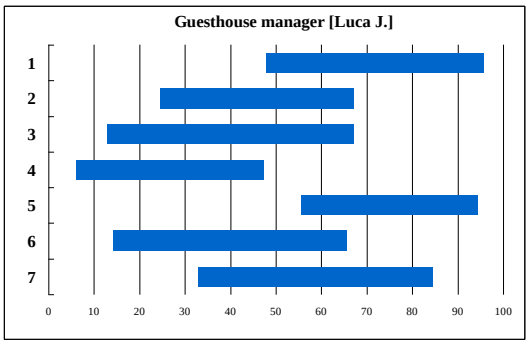
5.5 - **Mean intervals of uncertainty and relative degree of uncertainty following different groups of interviewees**

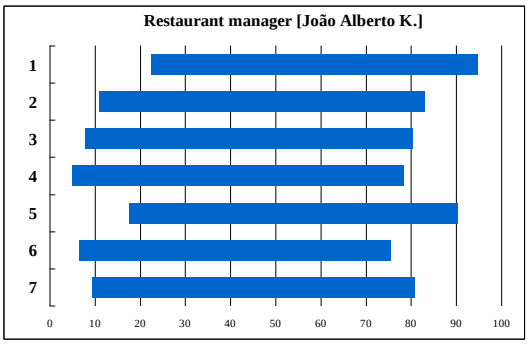
5.6 - **Summed scores for the criteria used in the appraisal**

5.1 - MCM individual *maps*

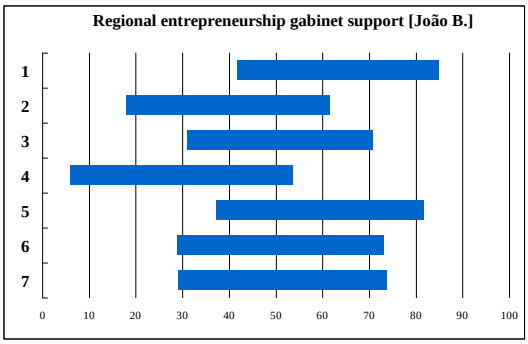
Tourism:

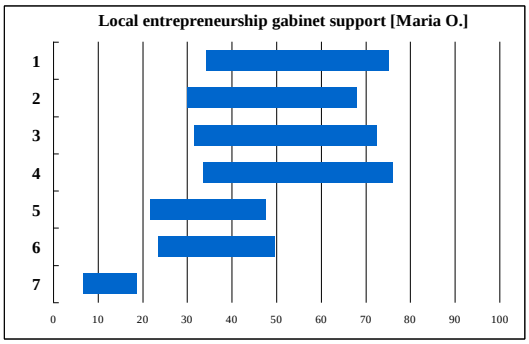


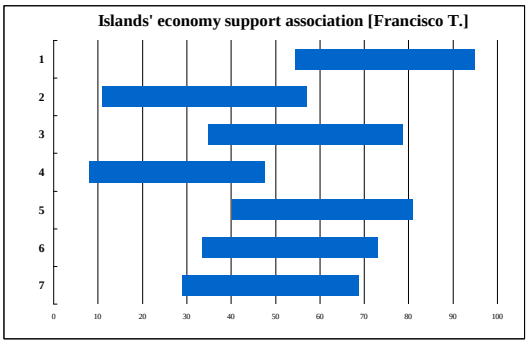




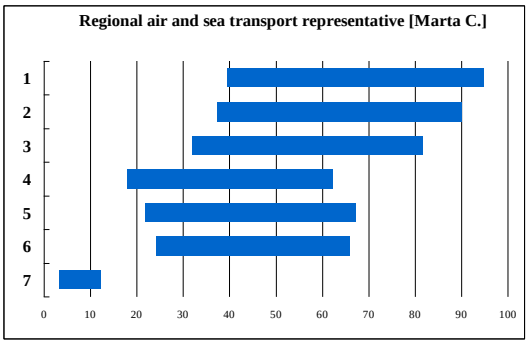
Entrepreneurship:

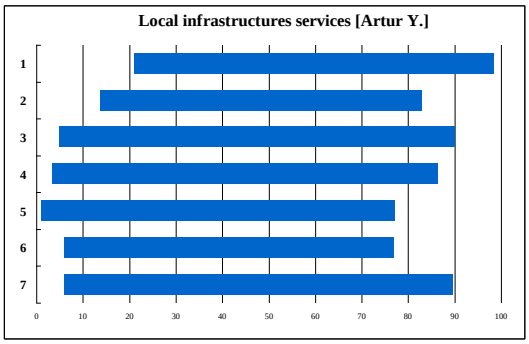




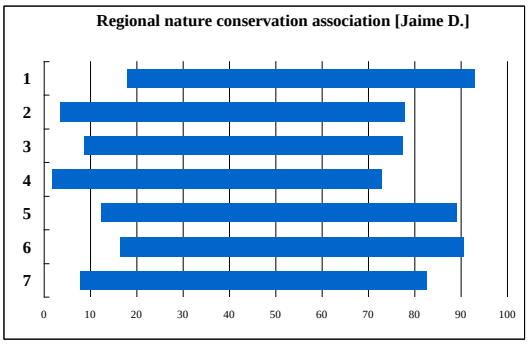


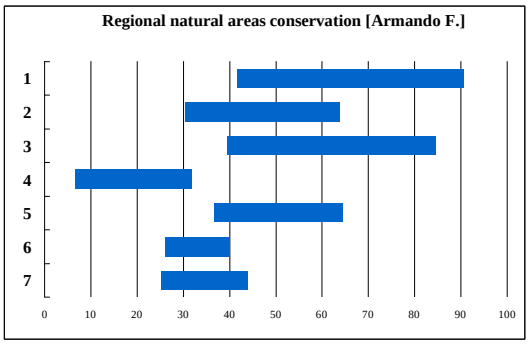
Transport:

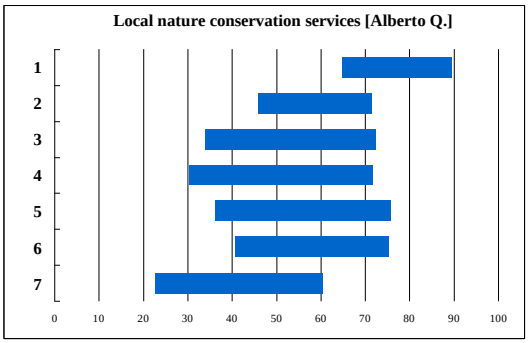


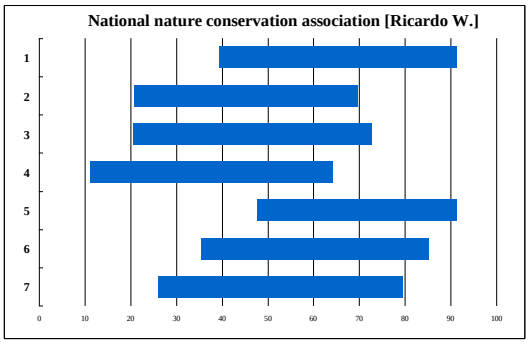


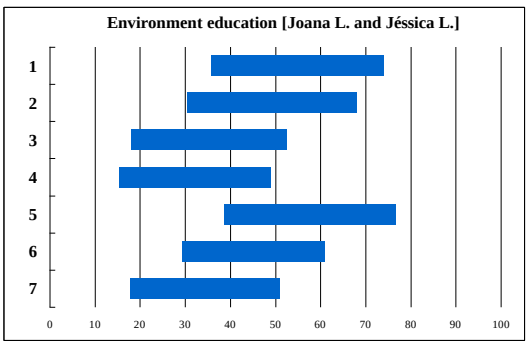
Nature conservation:



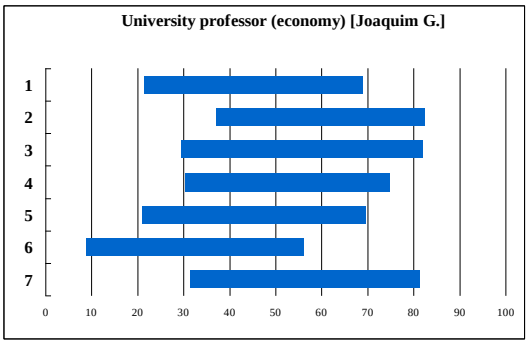


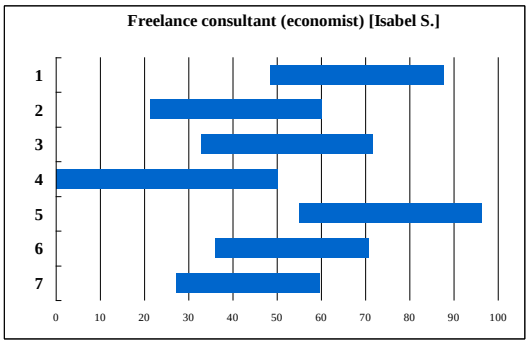




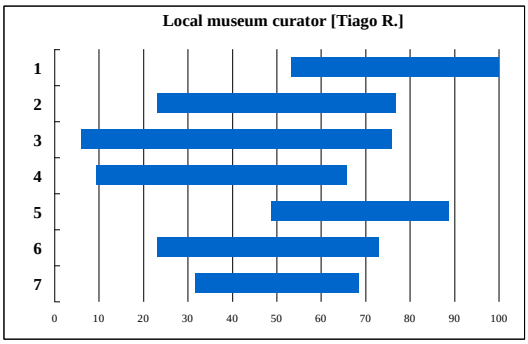


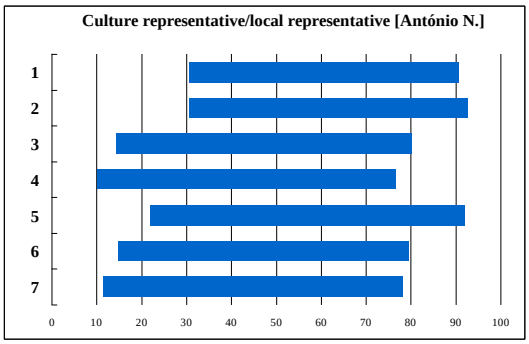
Economists:



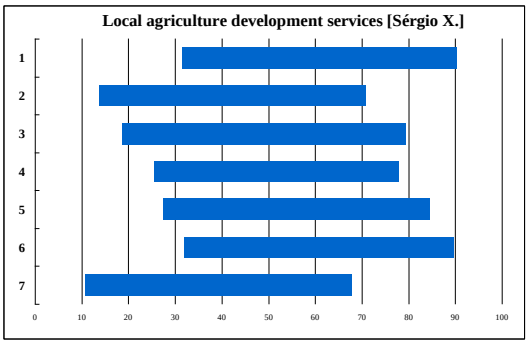


Culture:





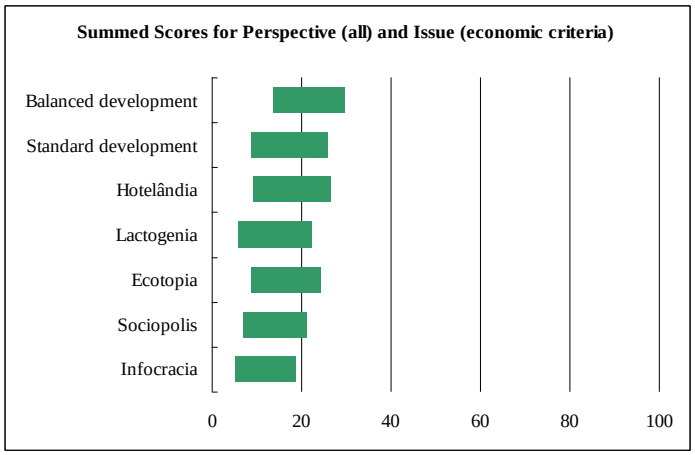
Agriculture:

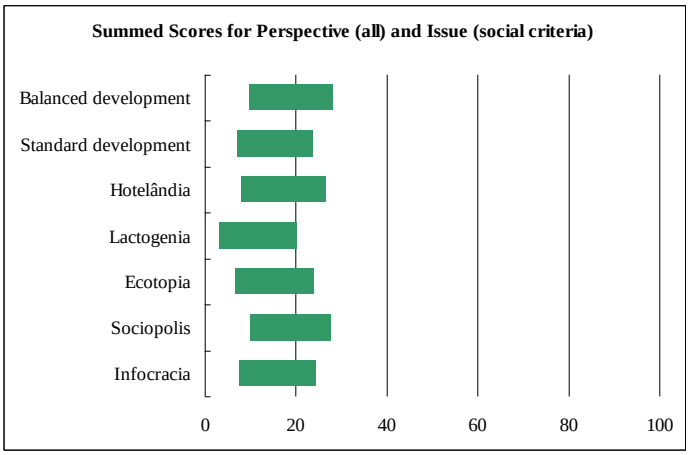


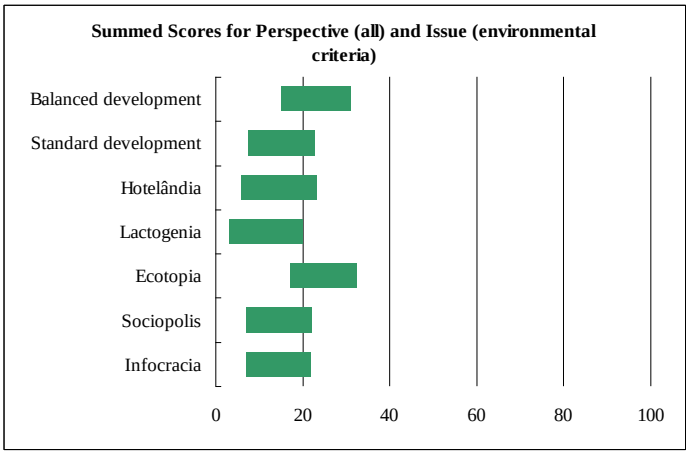
1: Balanced Development; **2**: Standard Development; **3**: *Hotelândia*; **4**: *Lactogenia*; **5**: *Ecotopia*; **6**: *Sociopolis*; **7**: *Infocracia*

Individual weighted scores ranges. For the seven scenarios and with a 1-100 scale showing performance. The furthest to the left the lowest and the furthest to the right the highest performance. Uncertainty is illustrated by the difference between highest and lowest score; the bar length.

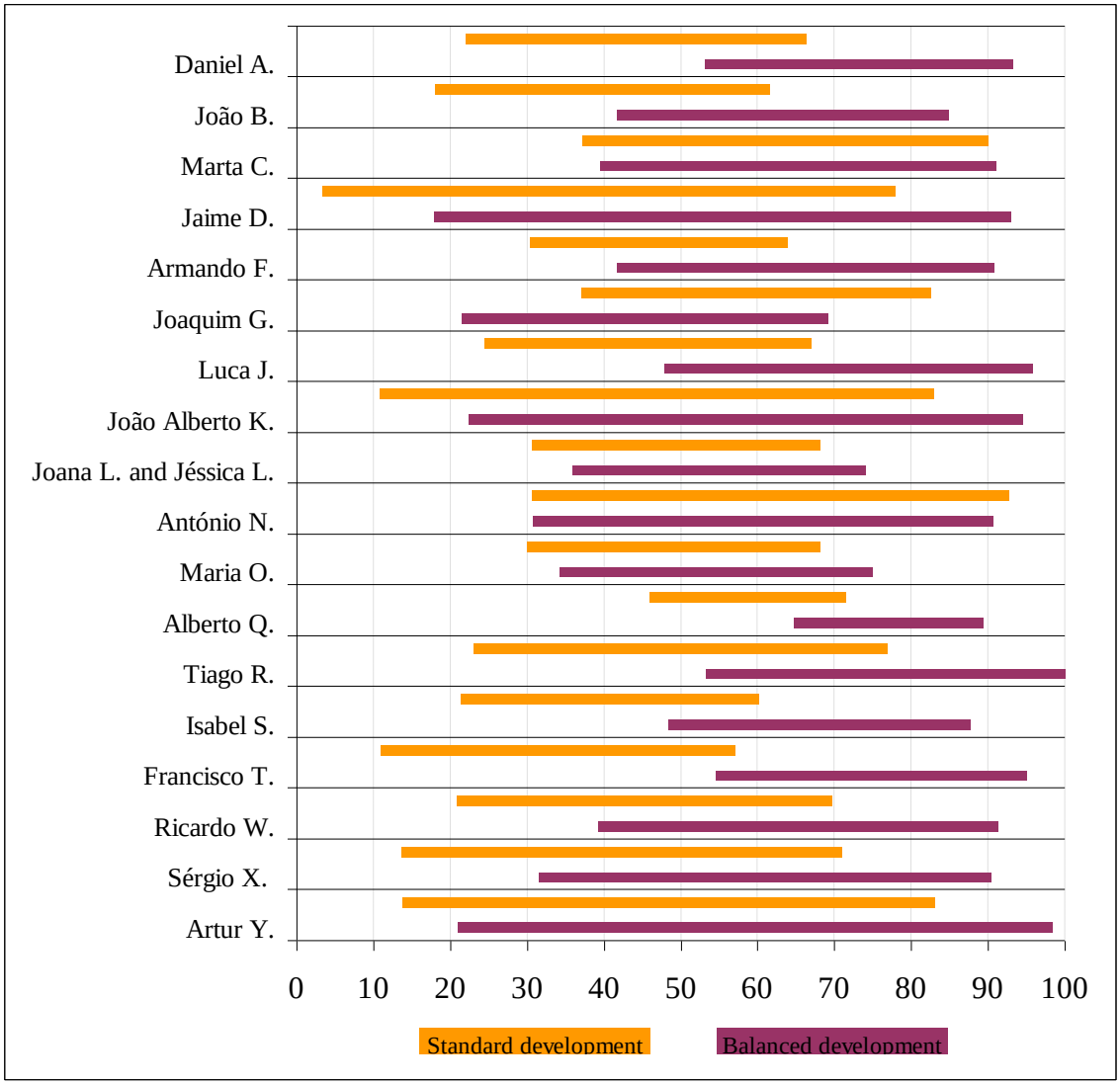
5.2 - Weighted scores for the different issues (groups of criteria: economic, social and environmental)



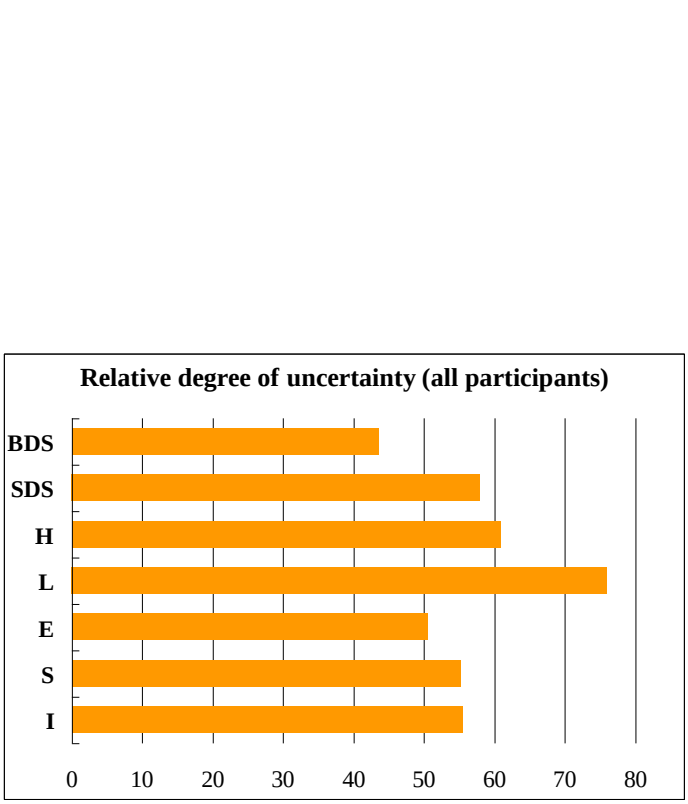


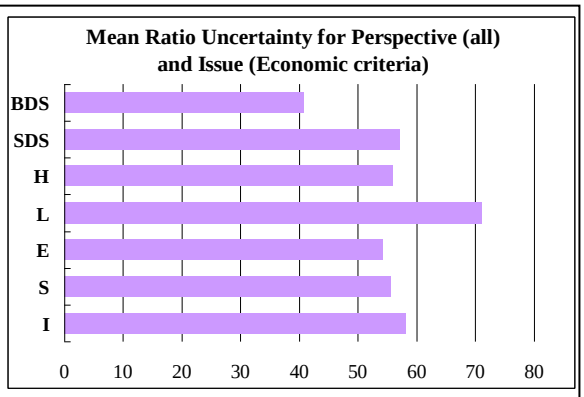


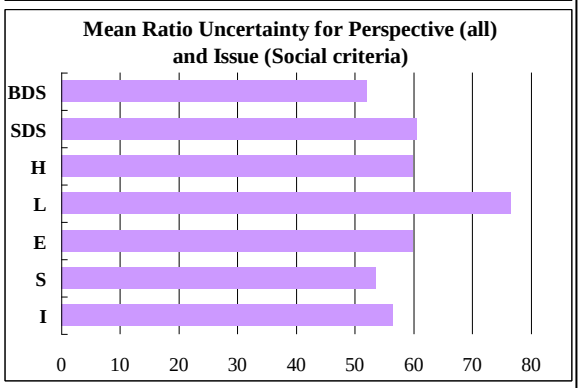
5.3 - Comparative scores for Standard Development and Balanced Development scenarios

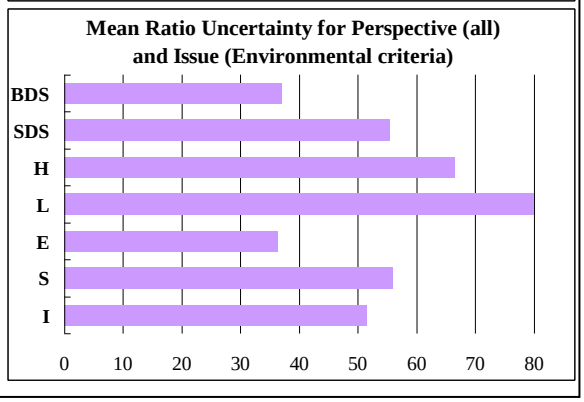


5.4 - Relative uncertainty for all participants and broken up into issues (groups of criteria: economic, social and environmental)





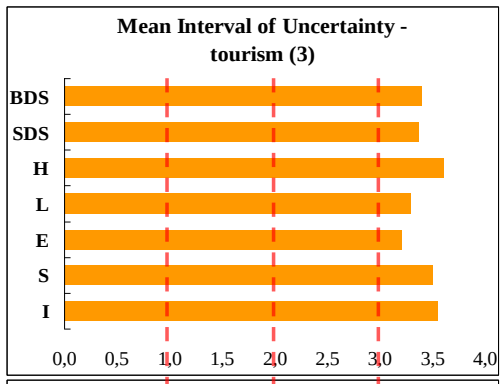


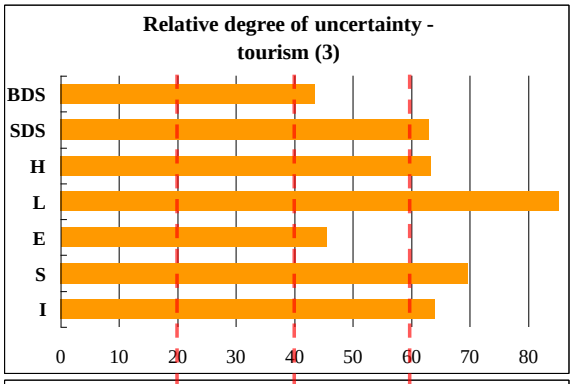


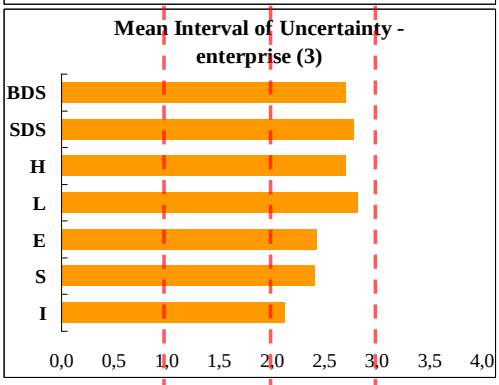
(BDS: Balanced Development, SDS: Standard Development, H: *Hotelândia*, L: *Lactogenia*, E: *Ecotopia*, S: *Sociopolis* and I: *Infocracia*)

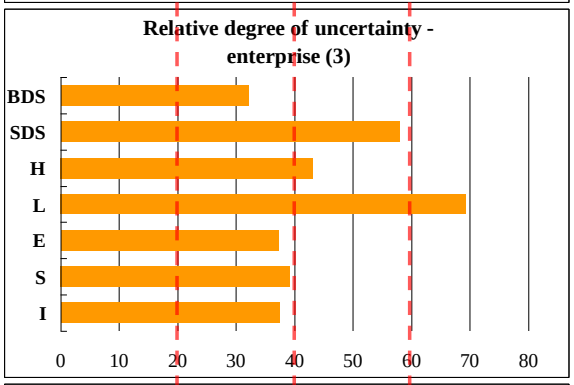
5.5 - Mean intervals of uncertainty and relative degree of uncertainty following different groups of interviewees

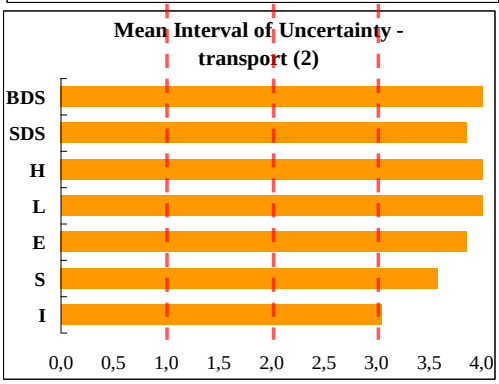
Uncertainties following the **areas of activity**:

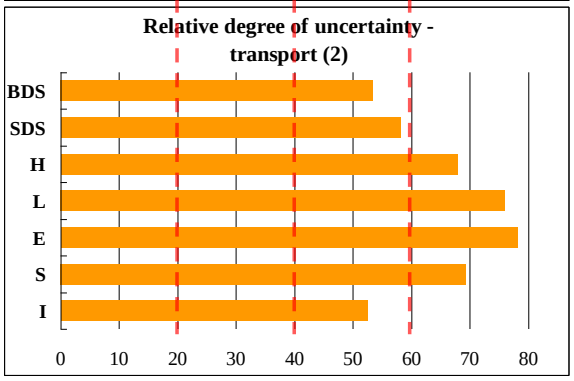


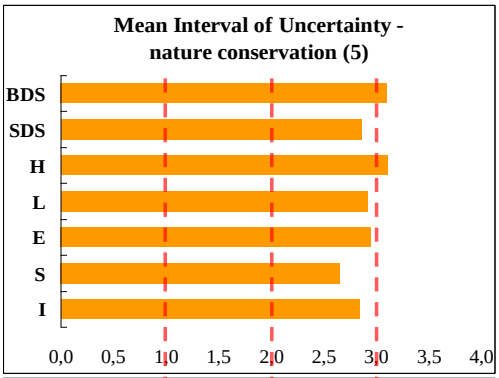


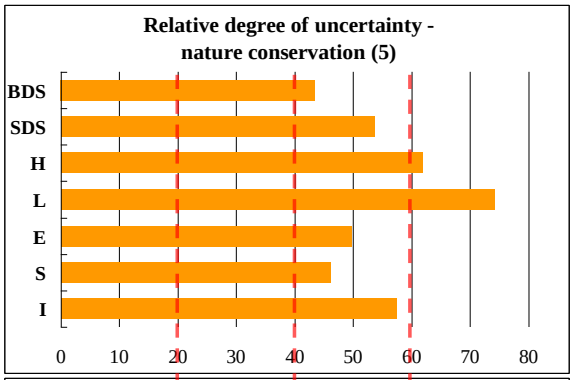


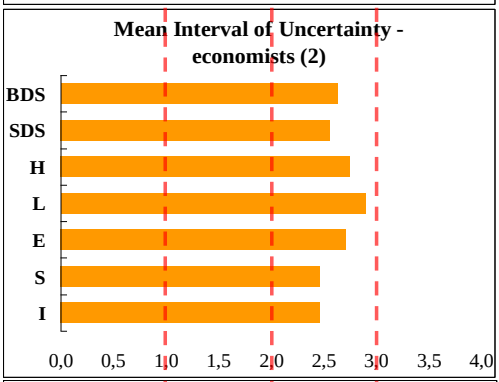


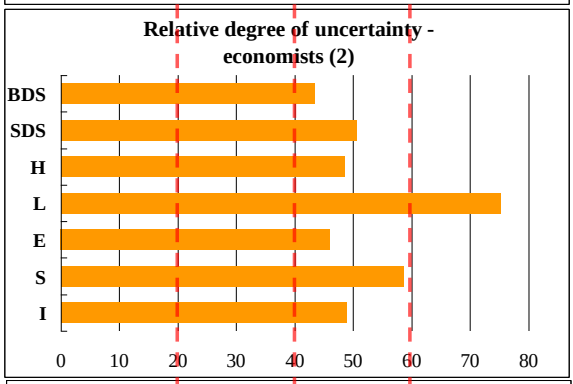


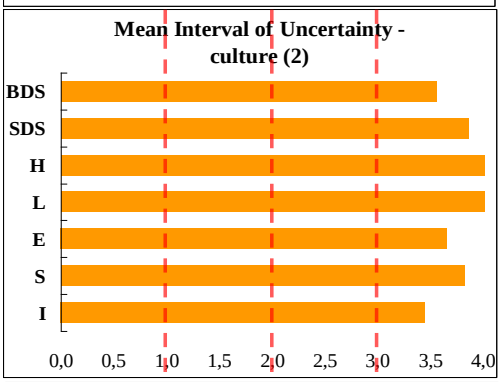


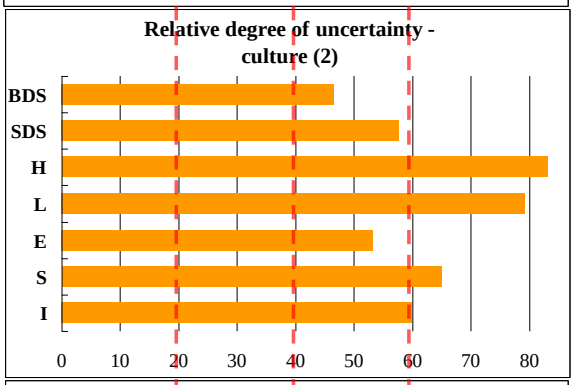

Mean Interval of Uncertainty - nature conservation (5)
BDS
SDS
H
L
E
S
I
0,0 0,5 1,0 1,5 2,0 2,5 3,0 3,5 4,0

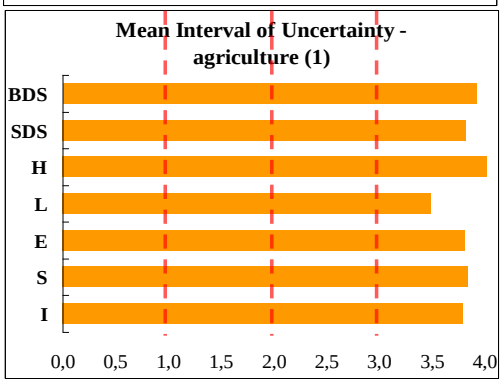

Relative degree of uncertainty - nature conservation (5)
BDS
SDS
H
L
E
S
I
0 10 20 30 40 50 60 70 80

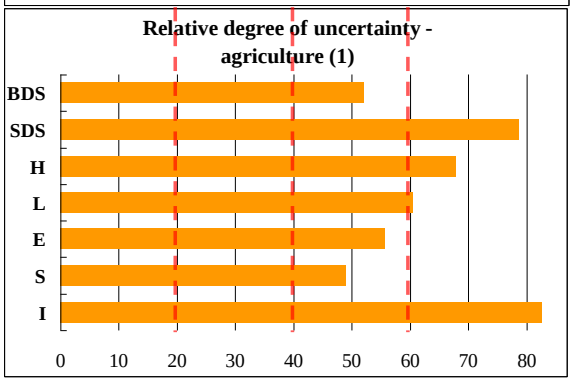

Mean Interval of Uncertainty - economists (2)
BDS
SDS
H
L
E
S
I
0,0 0,5 1,0 1,5 2,0 2,5 3,0 3,5 4,0


Relative degree of uncertainty - economists (2)
BDS
SDS
H
L
E
S
I
0 10 20 30 40 50 60 70 80

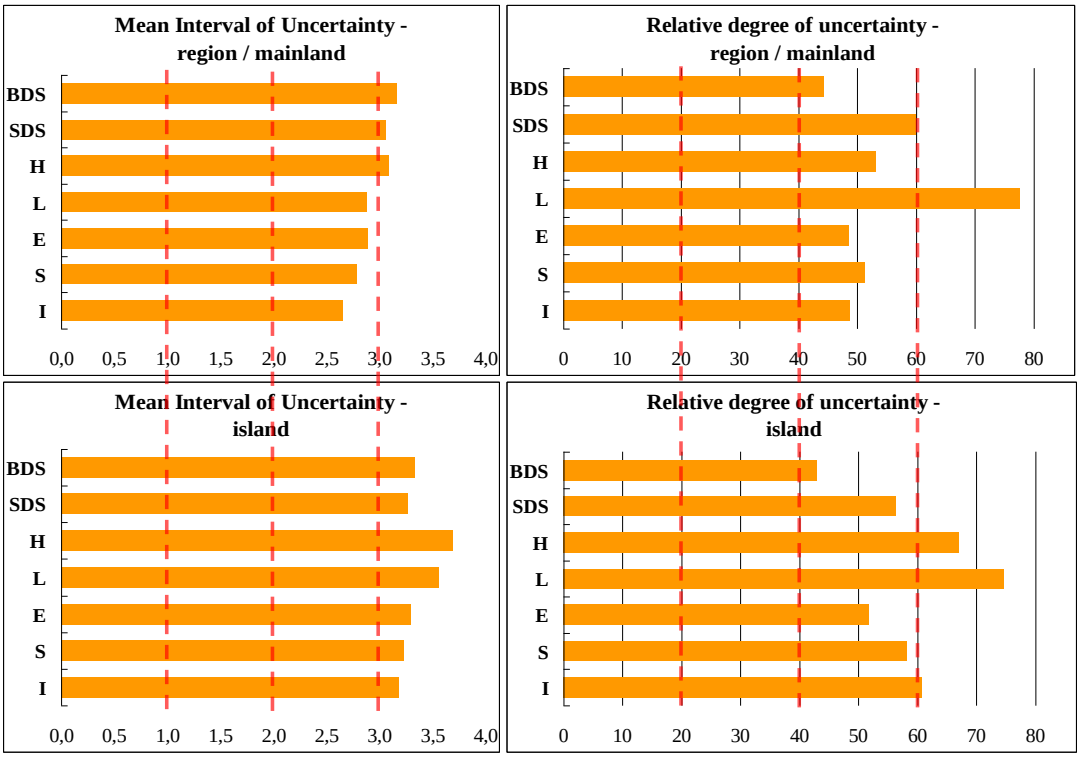

Mean Interval of Uncertainty - culture (2)
BDS
SDS
H
L
E
S
I
0,0 0,5 1,0 1,5 2,0 2,5 3,0 3,5 4,0


Relative degree of uncertainty - culture (2)
BDS
SDS
H
L
E
S
I
0 10 20 30 40 50 60 70 80

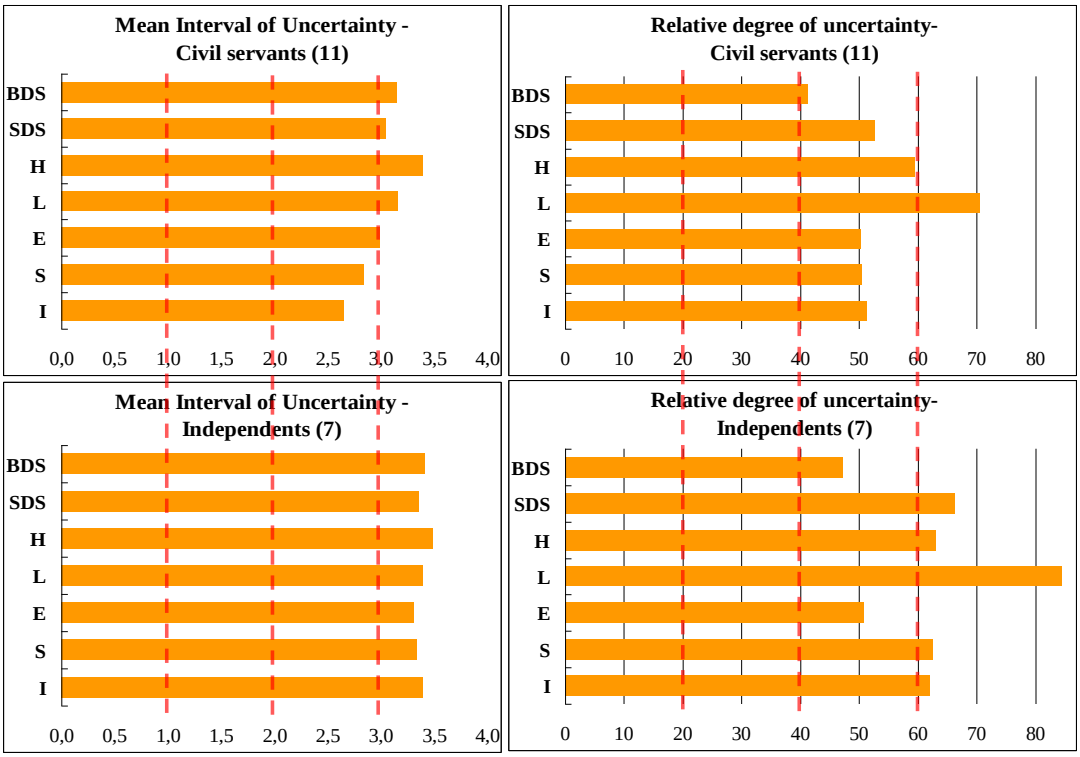

Mean Interval of Uncertainty - agriculture (1)
BDS
SDS
H
L
E
S
I
0,0 0,5 1,0 1,5 2,0 2,5 3,0 3,5 4,0


Relative degree of uncertainty - agriculture (1)
BDS
SDS
H
L
E
S
I
0 10 20 30 40 50 60 70 80

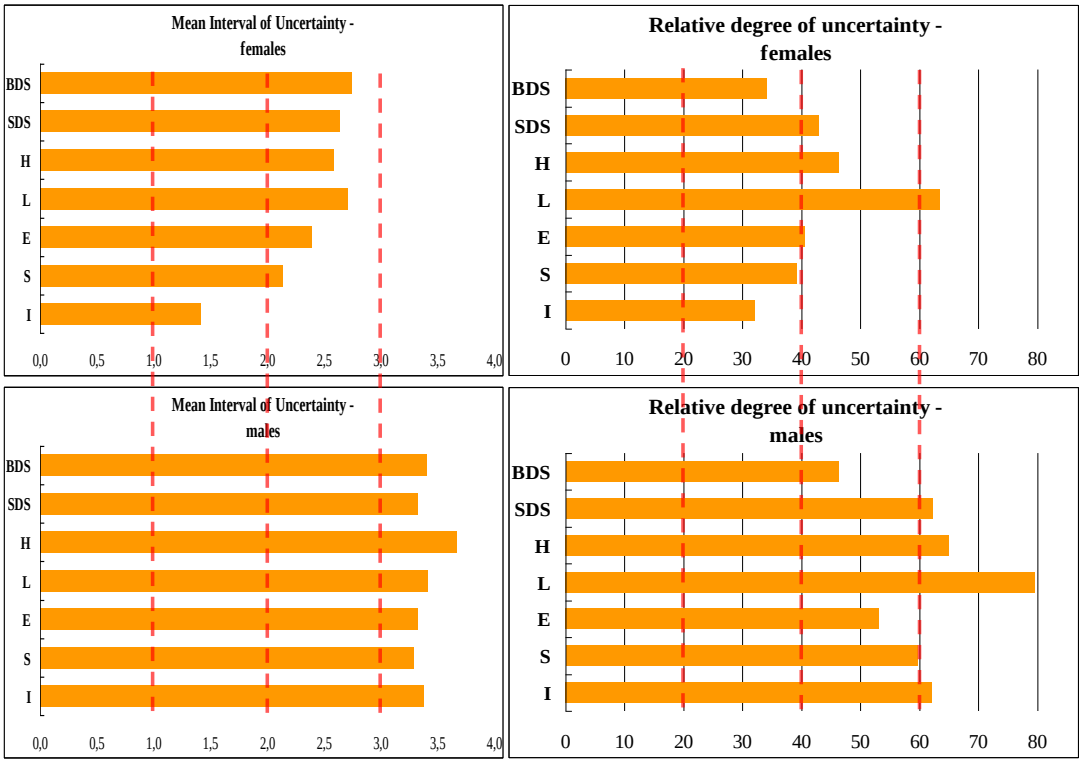
Uncertainty following the **location**:



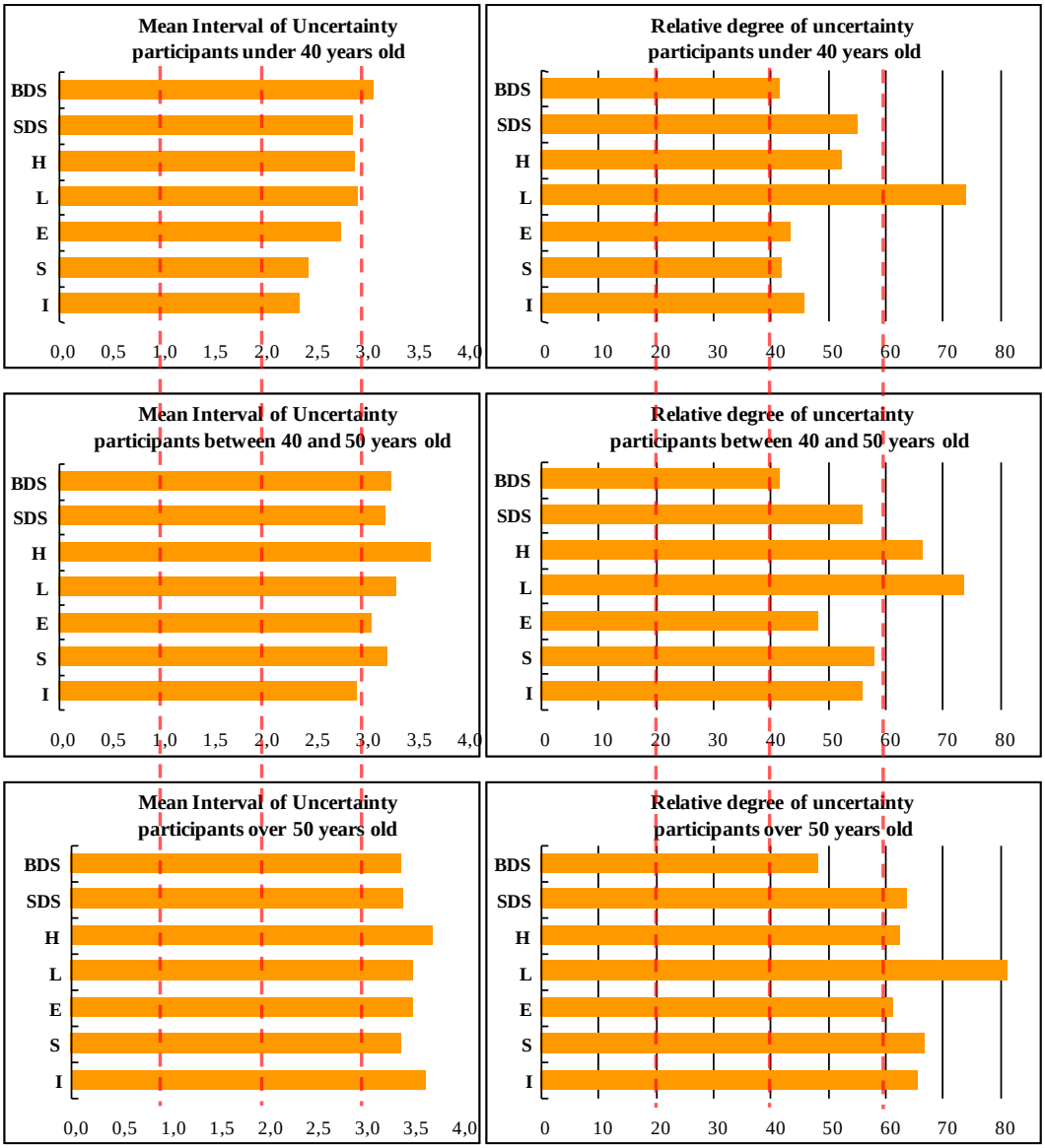
Uncertainty following the **professional status**:



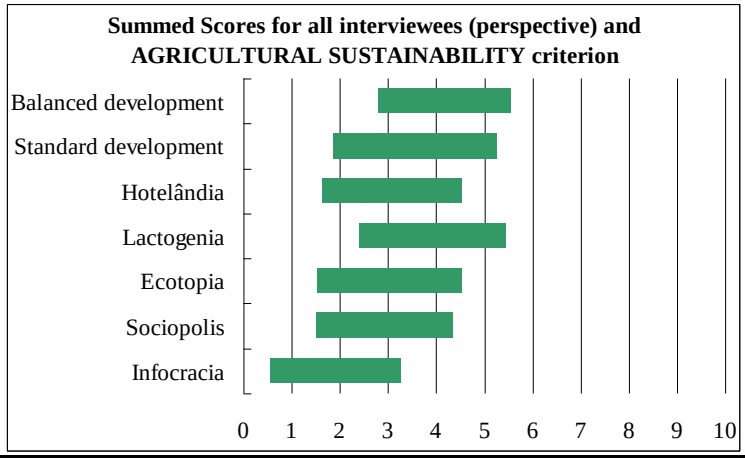
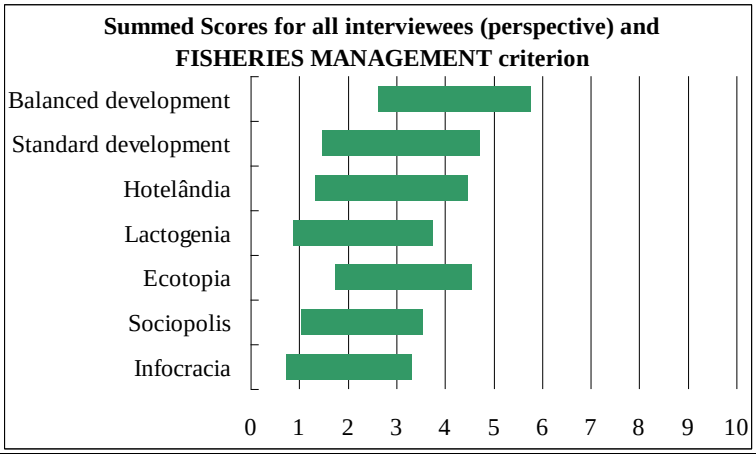
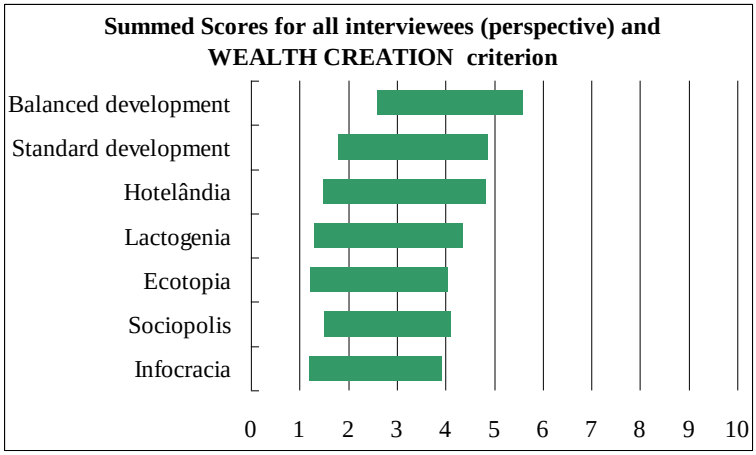
Uncertainty following the **gender**:

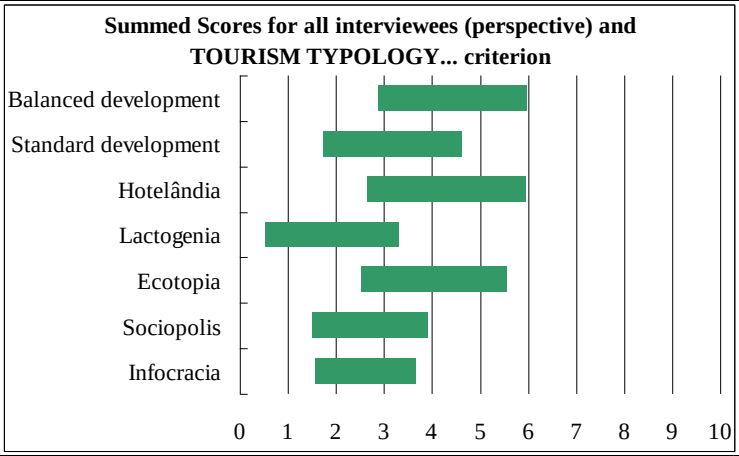
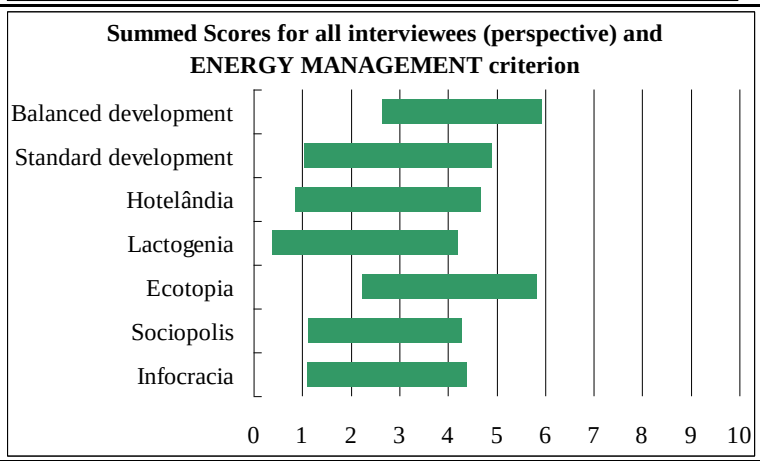
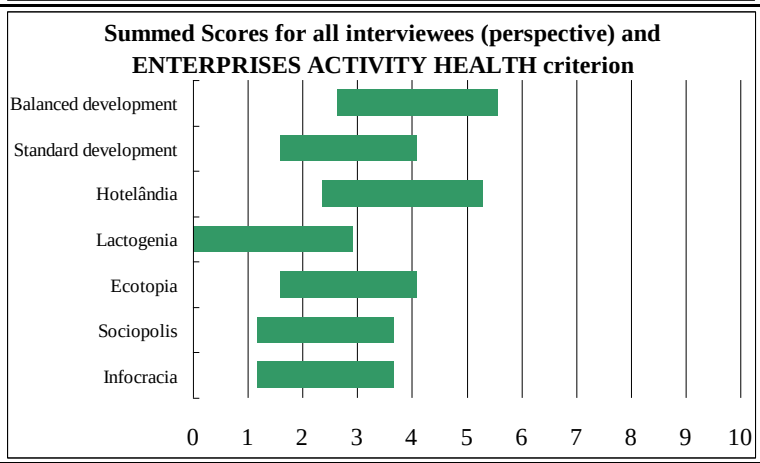
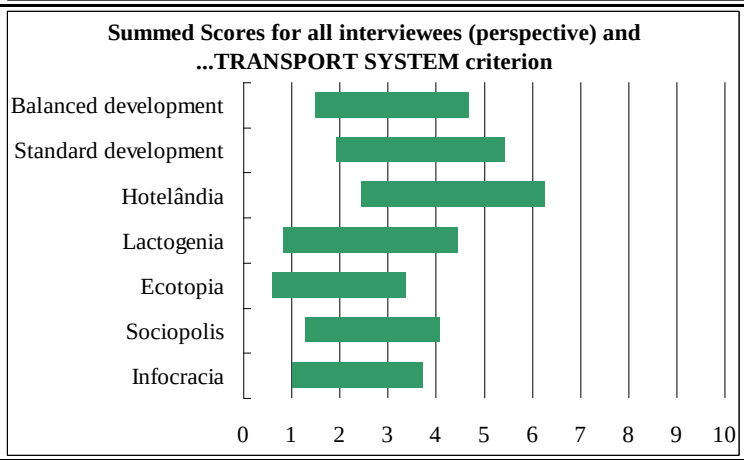


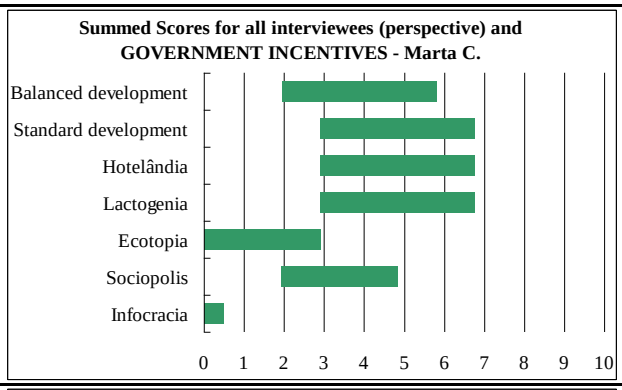
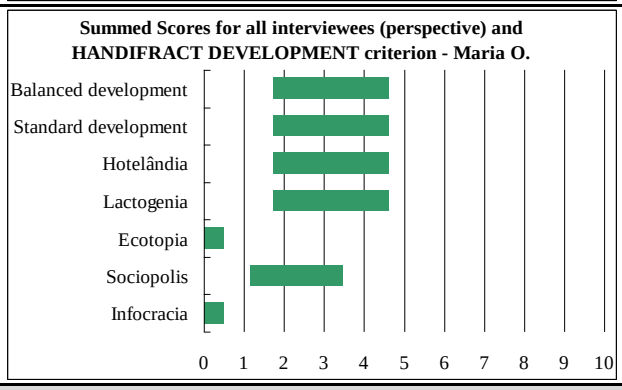
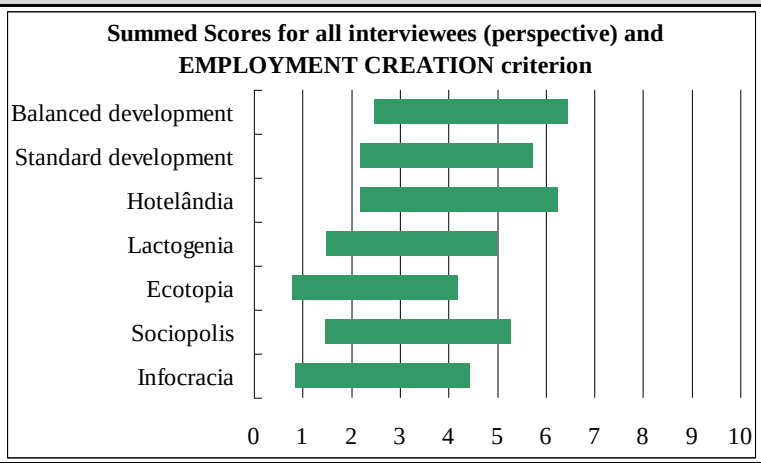
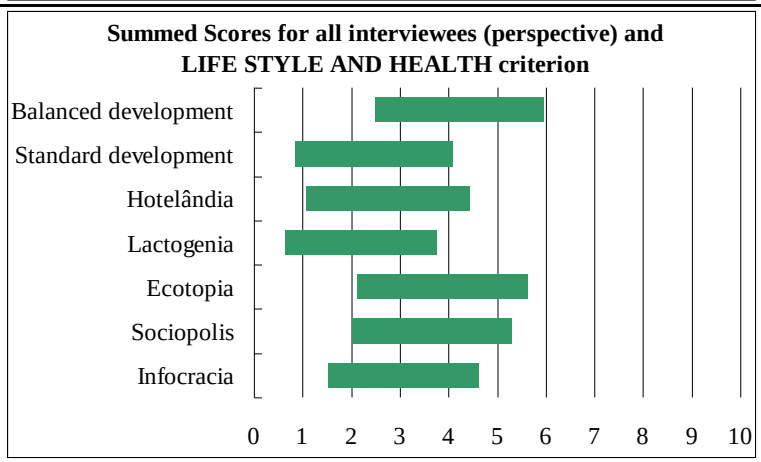
Uncertainty following the **age groups**:

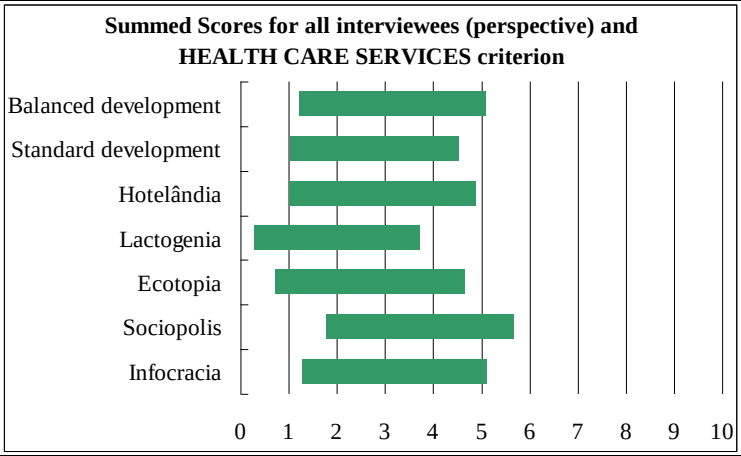
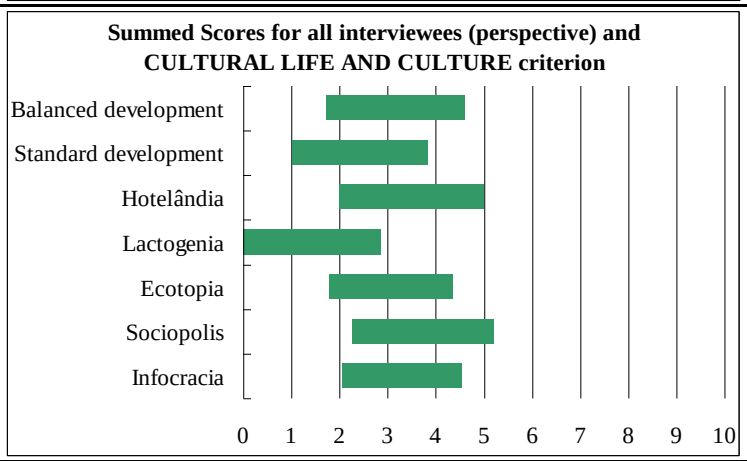
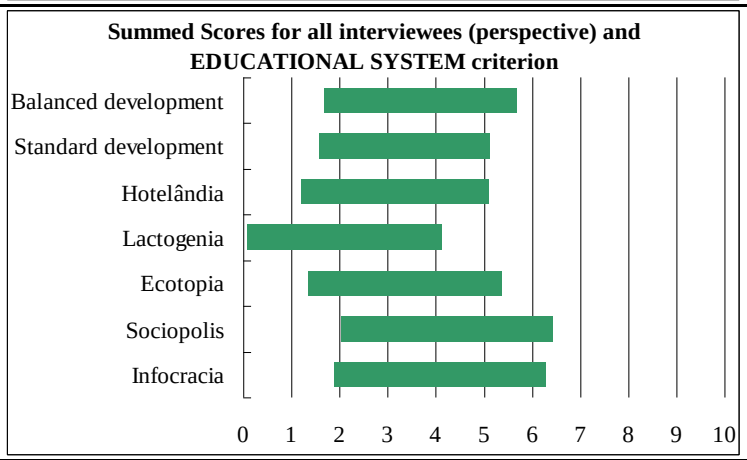
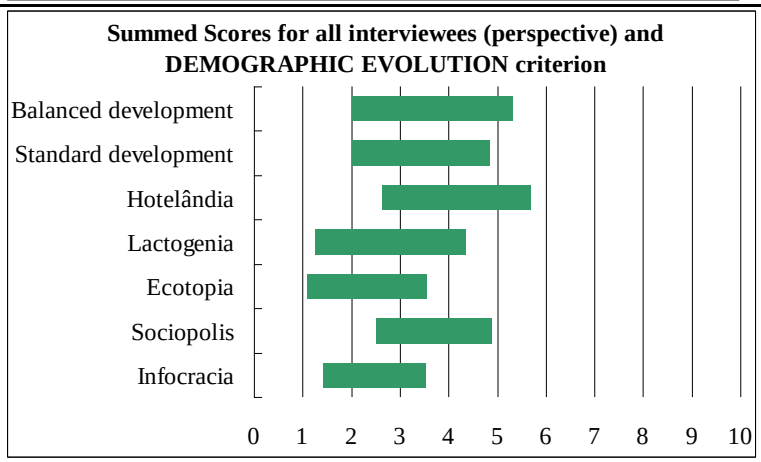


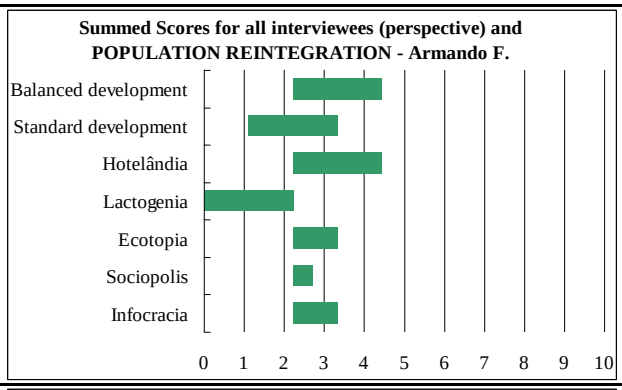
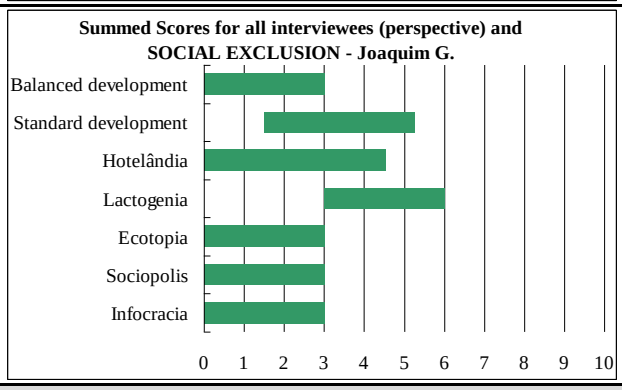
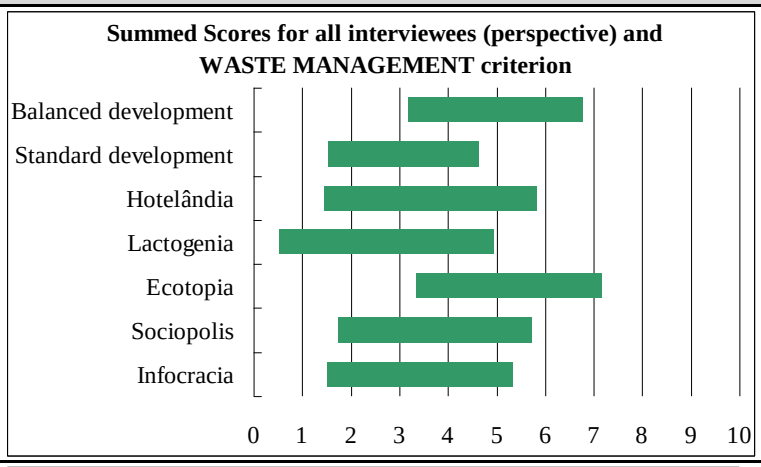
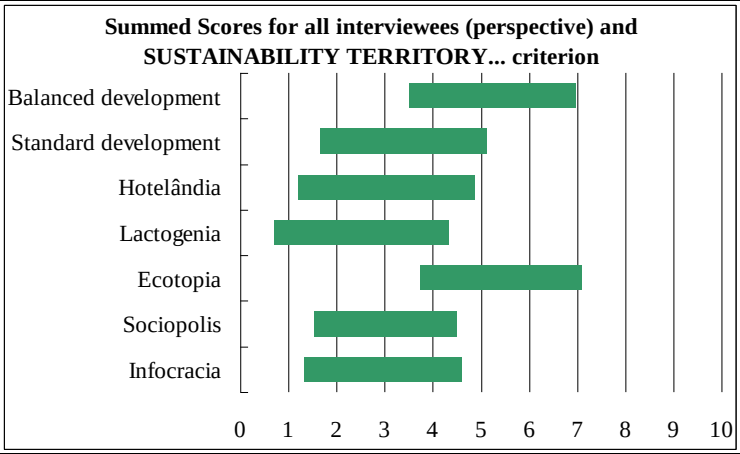
5.6 - Summed scores for the criteria used in the appraisal

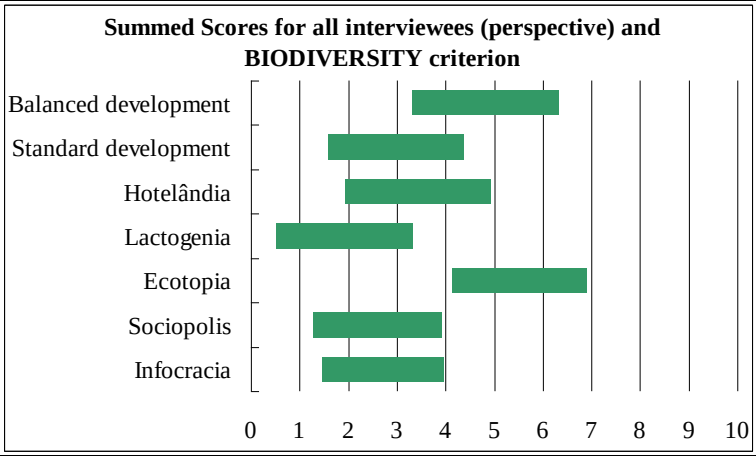
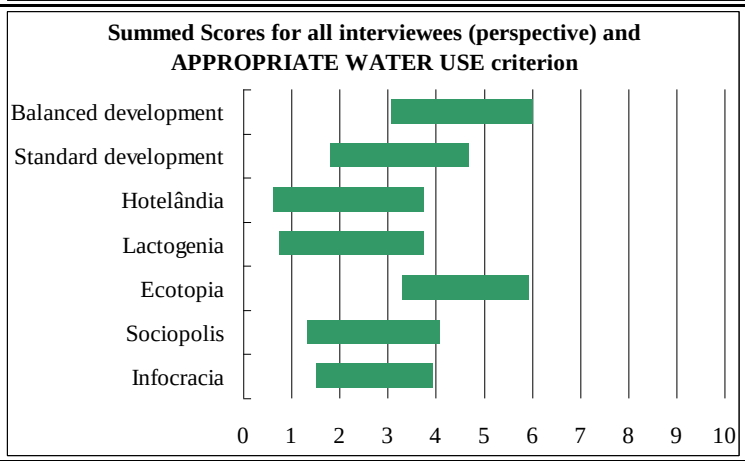
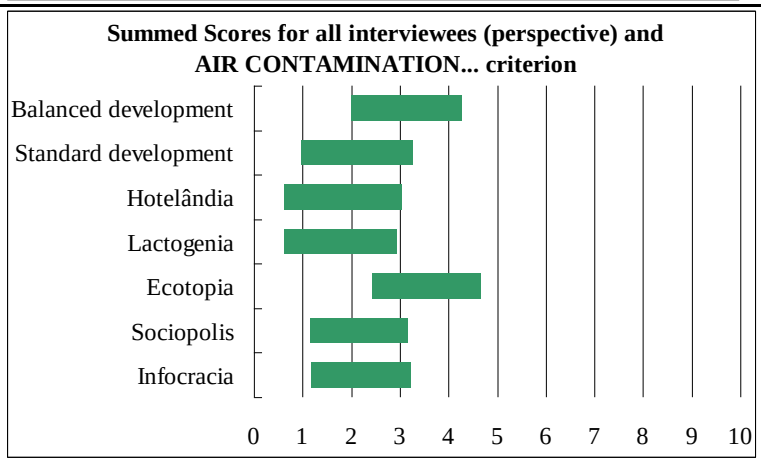
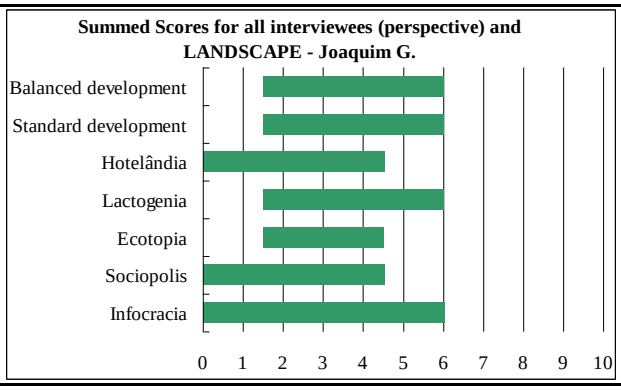
Economic criteria	
Agricultural sustainability (19)	
Fisheries management and its sustainability (19)	
Wealth creation (19)	

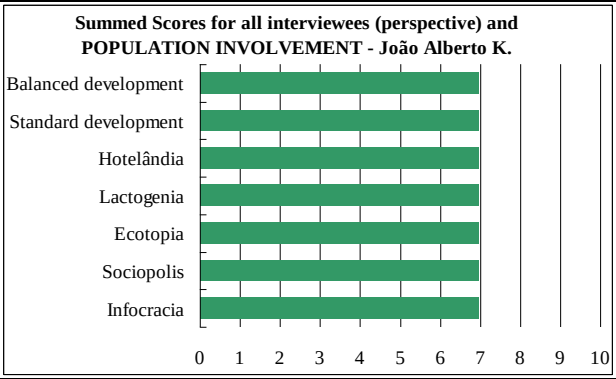
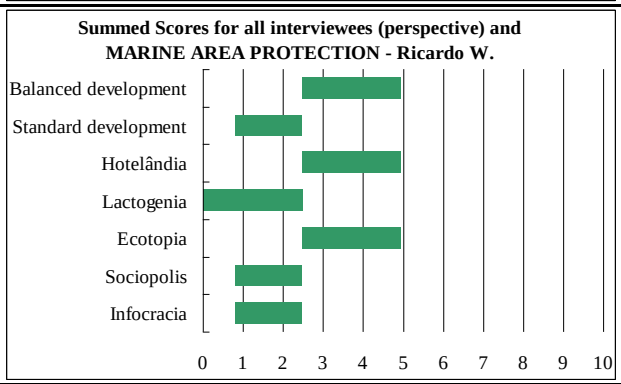
Tourism typology and profitability (19)	
Energy management * (11)	
Enterprises activity health* (2)	
Sustainability and adaptation of the transport system* (9)	

Government incentives** (1)	
Handicraft development** (1)	
Social criteria	
Employment creation (19)	
Life style and health (19)	

Health care services (19)	
Cultural life and culture* (14)	
Educational system* (14)	
Demographic evolution* (10)	

Population reintegration** (1)	
Social exclusion** (1)	
Environmental criteria	
Waste management (19)	
Sustainability territory resources and ground use (19)	

Biodiversity (19)	
Appropriate water use (19)	
Air contamination produced on the island (19)	
Landscape** (1)	

Population involvement** (1)	
Marine area protection** (1)	

6 - DESCRIPTION OF THE DIFFERENT STEPS OF THE PROJECT:

STEP 0.1: Preparatory work (supporting information)

Description of the Step
Collection of information related with the case study and *PReDSA* scenarios to present to the participants, Communication 1. This short report, 5 pages (Appendice 5.1), included data about Flores Island. That would support the interviews in case extra information was needed. The communication was thought to be sent to the interviewee before the interview.
Aims
The aim of having a summary report to give to every scoping interview's participant was to be sure that they had the necessary data to participate in the process.
How?
Creating a compilation of data from different regional reports and present it in a summary report (Communication 1).
Participants
None
Material
None
Inputs
Regional reports: *PReDSA, PROTA, POTRAA*…
Outcome
Short communication to present to the participants in the scoping interviews, explaining the objective of the project and presenting key data information in order to ease the interview and be used as a reminder during the scoping interviews (Appendix 4.1).
Utility of the outcome for the next step
This report would permit providing to the participants in this process with homogenous information about the case study.
Length of the process
3 months (January-February-March 2009)
Cost
GBP 0
Expected dead line
March 2009 (send information to stakeholders, latest)

STEP 0.2: Preparatory work (stakeholders' selection)

Description of the Step
Election of some of the specialised stakeholders and decision makers that participated in the process. They were asked to propose other participants, mainly local key informants, in order to create a snowballing dynamic and enlarge the circle of participants. They collaborated in two steps of the process. First, the scoping interviews, where they had to present their visions for the future of Flores Island. Then they were contacted in the last step of the project where they had to do the appraisal of the totality of the scenarios (5 *PReDSA*'s scenarios and the scenarios they helped developing in the Step 1, Scoping interviews). 25 stakeholders participated at some stage of the project (some withdraw after the 1st step and other, 2, were incorporated lately for the Multi-criteria mapping appraisal step).
Aims
The aim of having a large variety of participants was to enlarge the scope of the study, incorporating the largest possible variety of points of view.
How?
Contact with strategic stakeholders and snowballing. At the beginning of the project the idea was to contact maximum 15 specialised stakeholders (phone and email contact) but field work permitted to include more participant stakeholders, snowballing.
Participants
None
Material
None
Input
None
Outcome
List of participant stakeholders with contact information and presentation of their actual responsibility (document, presented in appendices).
Utility of the outcome for the next step
Ease the process by contacting the strategic stakeholders from the beginning of the study.
Length of the process
3 months (January-February-March 2009)
Expected dead line
March 2009 (preselected stakeholders received the supporting information, Communication 1) [respected]

STEP 1: Scoping interviews

Description of the Step
This step consisted on interviews to stakeholders and decision makers in order to identify their visions for the future of Flores Island and distinguish development scenarios.
Aims
This step permitted schematizing what were the visions of the future of the island the stakeholders had. Those visions were later developed by focus groups compound by island inhabitants, lay citizens.
How?
Realisation of one-to-one interviews where the stakeholders, previously briefed with the introductive report and presentation (Step 0.1), would develop their visions for the Island. The *PReDSA* scenarios would be a support as it helped underlining future possibilities.
Participants
Specialised stakeholders (at the beginning maximum 15, but snowballing and field work permitted to increase the number of participants).
Material
Audio recorder for later transcription
Input
- Supporting report, Communication 1, summary of the research project with some data on the Island - Presentation (done briefly before the interview in order to refresh the main data and to clearly set the aims of the study)
Outcome
Transcripts, which were the basis for developing two specific scenarios for Flores Island. Proposed projects for Flores Island (the interviewees were asked to propose projects to be implemented in the island).
Utility of the outcome for the next step
The elaborated scenarios (Step 1.2), originated from the scoping interviews, were useful in the following step where focus groups, composed by island inhabitants, had to develop them (Step 2).
Length of the process
1 months
Expected dead line
April 2009 [respected]

STEP 1.2: Development of draft for alternative scenarios

Description of the Step
The scoping interviews were an opportunity to identify specific development scenarios for Flores Island. The collected data (recorded and transcribed) was treated and scenarios were identified. Those scenarios were incomplete, as individual interviews would not, by themselves, provide all the important information.
Aims
The aim of this step was to deduct the framework of specific development scenarios for Flores Island.
How?
The analysis of the outcomes of the scoping interviews helped to develop 2 scenarios for the Island.
Participants
None
Material
None
Input
Transcripts of the scoping groups' interviews.
Outcome
Framework of alternative scenarios for Flores Island.
Utility of the outcome for the next step
The outcome of this step was later developed in focus groups interviews (Step 2). It was an opportunity to correct, amplify and validate the alternative scenarios deduced from the scoping interviews.
Length of the process
1 month
Expected dead line
May-June 2009 [respected]

STEP 1.2: Creation of focus groups

Description of the Step
This step consisted in creating the groups that participated in dynamics where local population developed the scenarios created thanks to the scoping interviews (done to stakeholders in Step 1).
Aims
The aim was to configure the groups that participated in the focus interviews. Those groups had to include a large variety of visions, in order, but considering the limitations of the present study, to get the richest picture possible.
How?
The groups were chosen following a socio-professional grouping. Homogeneous groups helped reaching more accurate visions and at the same time were an opportunity for the different island actors to meet and discuss issues related with sustainability and future development. The proposed groups were: - **Tourism entrepreneurs**: considering the opinion of this group allowed better knowing what were the expectations of the socio-professional group that hold part of the economic growth potential in the island economy. Their opinion was important as their activities were directly related with nature conservation and valorisation issues. - **Farmers**: agricultural activities had continuously transformed the Azorean Islands; their activity had also unbalanced some weak ecosystems, like the volcanic lakes hydrographical basins. Developing sustainable agricultural habits was one of the main challenges. - **Local products producers**: their activity was directly related with the image of the archipelago, tourism and exports. Reflection on how they see the future of their activities was interesting as it also enlighten their potential and threats. It was also an opportunity to make them reflect on how they could take advantage of the island specificities. - **Fishers**: aquatic ecosystems' adequate management was decisive as the continuity of the fisheries would help supporting traditional activities as it permitted developing new potential ones. Considering fishers' attends seemed crucial. - **Youth group:** young adults' expectations seemed interesting to be considered. - **2 open groups (Lajes das Flores and Santa Cruz das Flores)** were organized to convene population that could not attend to the other interviews or could not be classified in any of the groups.
Participants
None
Material
None
Input
None
Outcome
Definition of the focus groups.
Utility of the outcome for the next step
The focus groups had to discuss the specific scenarios for Flores Islands, step 4.
Length of the process
One month
Expected dead line
July 2009 [respected]

STEP 2: Focus groups interviews

Description of the Step
Interviews to the groups previously created in Step 1.2. Those interviews helped enriching the scenarios inferred in the scoping interviews (Step 1). The participants were asked to think and give their opinion about the scenarios created after the scoping interviews.
Aims
This step was an opportunity to get local population visions. It was done in an already structured schema as the stakeholders had already helped creating specific scenarios; participants reflected on previously built scenarios drafts. Inhabitants' participation was meant to enrich and to validate the process. Reflection on projects for the island and criteria selection for MCM Appraisal step.
How?
Focus groups interviews. Previous to the interviews the participants were briefed about the study, the aims of their participation and *PReDSA* report.
Participants
Focus groups (7 focus groups, 30 participants in total)
Material
- Audio recorder for later transcription - Data show, computer - Material for projects and criteria activities
Input
Communication 2 (Appendix 4.2)
Outcome
The process, after the analysis of the transcripts from the focus interviews, permitted validating, developing and enriching the specific scenarios for Flores Island. The outcome was those "definitive scenarios", directly based on the draft scenarios deduced from the scoping interviews.
Utility of the outcome for the next step
The "definitive scenarios" were appraised in Step 3 by the stakeholders. The stakeholders worked on scenarios that they started to create. It supposed a reflexive process as they faced scenarios that had been validated and enriched directly by local population, at the end the appraisal scenarios were composite scenarios with contributions from the stakeholders and the lay citizens. Participants also proposed projects for the island and reflected on the projects proposed by the stakeholders. They also selected their preferred appraisal criteria for the island: 4 economic, 4 social and 4 environmental. They could also propose their own criteria.
Length of the process
2 month
Expected dead line
August-October 2009 [respected]

STEP 3: Appraisal of all the scenarios, MCM interviews

Description of the Step
This step consisted on a Multi-Criteria Mapping appraisal (Stirling 2005 and McDowall and Eames 2006) of the scenarios (*PReDSA*'s and specific scenarios developed in the previous steps). Computer based one to one interview.
Aims
The aim of this step was to do the appraisal of the scenarios. And to see if the MCM methodology was adapted to this kind of cases.
How?
MCM interviews
Participants
Stakeholders
Material
- Audio recorder to ease the transcripts - MCM software, computer.
Input
- Report with all the scenarios, Communication 3 (Appendix 4.2) (final draft of the scenarios with the Focus groups inputs) - Summary of the scenarios (1 sheet) to ease the discussion. - The program (MCMapper) had to be set up before the interviews.
Outcome
Report with the appraisal of the totality of the scenarios. It allowed perspectives combination, grouping and comparison.
Utility of the outcome for the next step
This last step enabled the stakeholders to: - do the appraisal of all the scenarios - face how the inhabitants of the island had considered their own vision and what were their contributions
Length of the process
2 months (November and December 2009)
Expected dead line
January 2010 [respected]

7 - POSTER TO DISCLOSE THE FOCUS GROUPS:

8 - MATERIAL USED IN THE FOCUS GROUPS:

Power show presentation:

2030

Flores, visões de futuro e desenvolvimento sustentável

BRUNEL UNIVERSITY

Focus group interviews

José Benedicto Royuela
Prof. Susan Buckingham
Prof. Malcolm Eames

Flores, visões de futuro e desenvolvimento sustentável

2030

Objectivos da reunião

- Partilhar as perspectivas de futuro dos agentes sociais
- Reflectir sobre esses pontos de vista
- Definir critérios para o desenvolvimento sustentável nas Flores
- Desenvolver essas visões (apresentadas em cenários) considerando os vossos pontos de vista pessoais

Actividade

Cenários do PReDSA para os Açores

- A HOTELÂNDIA baseado no desenvolvimento turístico com quatro forças motrizes – a qualidade dos produtos regionais, a qualidade do património natural, a diferenciação do património cultural e os transportes aéreos e marítimos.

- A LACTOGENIA baseado na excelência do desenvolvimento agro-pecuário com as forças motrizes da qualidade dos produtos regionais, do potencial agro-pecuário, dos subsídios e políticas da União Europeia.

- A ECOTOPIA baseado na defesa e valorização do património natural com as forças motrizes dos recursos geotérmicos, da qualidade do património natural, da pressão sobre os recursos naturais e dos riscos geológicos e tectónicos;

- A SOCIOPÓLIS baseado na valorização do capital social com as forças motrizes da população jovem, dos apoios da União Europeia, da educação;

- A INFOCRACIA baseado na aposta da sociedade da informação com as forças motrizes da posição geo-estratégica, da população jovem, da diáspora açoriana e da ultraperiferalidade.

Fonte: Plano Regional de Ordenamento do Território para a Região Autónoma dos Açores

O interesse de desenvolver cenários

Trabalhar com **cenários de futuro** permite mostrar como poderia ser a Ilha em 2030 e pensar em **como se pode chegar a essas visões.**

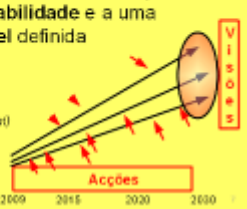
Também permite reflectir sobre possíveis factores que podem vir a afectar o rumo do desenvolvimento, podendo assim **definir estratégias para fazer frente aos imprevistos.**

O desenvolvimento participativo destas visões permite também uma maior **cooperação entre agentes.**

Estratégias locais de sustentabilidade

Caminhos possíveis de desenvolvimento que levam a **objectivos de sustentabilidade** e a uma **visão de futuro desejável** definida pelos agentes de uma comunidade local.

Fonte: ELOS – caso de Loulé (Portugal)



Perspectivas dos agentes sociais

Perspectivas dos agentes sociais

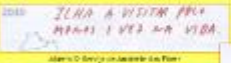
"coesão económica, social e Ambiental [...]agricultura 'ambientalmente' biológica"

"10.000 habitantes, núcleo investigação, taxi aéreo (Corvo)"
"qualidade, vida e tranquilidade"

Perspectivas dos agentes sociais

"retiro de pensionistas"

"turismo natureza não massificado e activo destino remoto e espiritual"



"selvagem, turismo de natureza"

"natureza, turismo rural"

Perspectivas dos agentes sociais

"turismo + desenvolvimento
Apostar na conservação da natureza"

"o turismo poderá contribuir para o desenvolvimento da ilha, se se criarem condições"

Perspectivas dos agentes sociais

Critérios

Que é um critério? - **característica** que permite **distinguir** diferentes coisas e realizar um **juízo de valor**.

Interesse de definir critérios: avaliar os cenários propostos neste estudo e no PreDSA na fase a seguir (fase 3 do estudo).

Exemplos de critérios para avaliar um carro:
- desenho
- segurança...

Actividade

Cenários para as Flores

Cenários para as Flores

Cenário 1 – Desenvolvimento standard	Cenário 2 – Desenvolvimento equilibrado
Cenário do desenvolvimento através do investimento público em infraestruturas, apostando num sector primário mais intensivo que vai permitir exportar alguns produtos agrícolas (carne de bovino, leite e produtos derivados da leite) e um modelo de turismo mais estandardizado (apostando nas oportunidades da ilha mas não priorizando o impacto ambiental mínimo). Incremento da actividade económica (privada e pública) e emprego.	Cenário do desenvolvimento através de altos standards de qualidade ambiental e valorização dos valores próprios associados à própria natureza e vivência da Ilha. São fundamentais investimentos prudentes e infra-estruturas que pretendam valorizar a ilha pensando no turismo mas sobretudo nos seus habitantes, e que prioritizam o impacto ambiental mais baixo, assim como a preservação, melhoramento e valorização dos ecosserviços e redução da dependência exterior.

	Cenário 1	Cenário 2
Estratégia a largo prazo	Coesão com as outras ilhas através de investimentos importantes mas sacrificando parte do património da ilha, incrementando a qualidade de vida atravesse de grandes investimentos	Preservação do património da ilha (natural e cultural) através de políticas e actividades que os valorizam e incrementando o bem estar. Pode ralentizar certas actividades económicas
Investimentos chave	Ex.: orientados à coesão transportes, saúde, escola profissional orientada à produção, energias renováveis 80%...	Ex.: orientados a valorizar o e melhorar qualidade de vida, gestão de resíduos, escola profissional (preservação e sustentabilidade), energias renováveis 100%, saúde...
Perigo	"Criar elefante branco"	"Criar elefante verde"

	Cenário 1	Cenário 2
Agricultura	Produção de alguns produtos destinados à exportação (carne e leite), incremento em intensidade	Orientada ao mercado local, substituir importações, biológica, variada

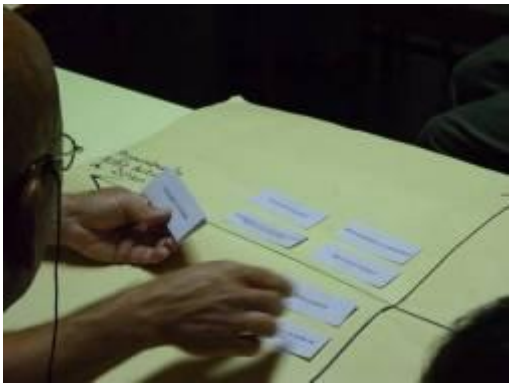
	Cenário 1	Cenário 2
Pesca	Pesca intensiva, tendência à maximização dos recursos	Prioridade à conservação e sustentabilidade, rendimentos alternativos compensatórios para os pescadores

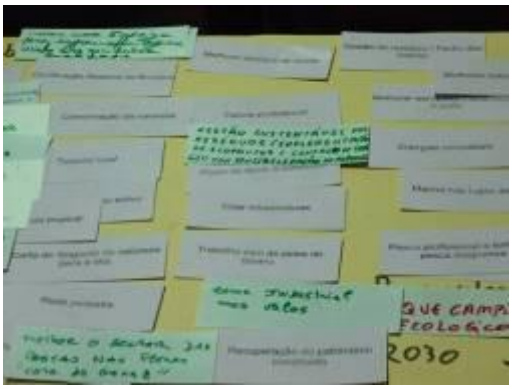
	Cenário 1	Cenário 2
Turismo	Número de turistas relativamente elevado, podendo criar uma certa pressão sobre o ambiente. O modelo de desenvolvimento é o das ilhas mais grandes	Procura de um turismo de qualidade, desenvolvimento não em detrimento da população local, esta beneficia do turismo

	Cenário 1	Cenário 2
Transporte	Investimentos importantes (estradas, aeroporto e porto) para permitir mais turismo, crescimento populacional e exportações	Mantimento do serviços actuais e/ou procura do mínimo impacto ambiental

Muito obrigado!

Projects activity (see Appendix 15):

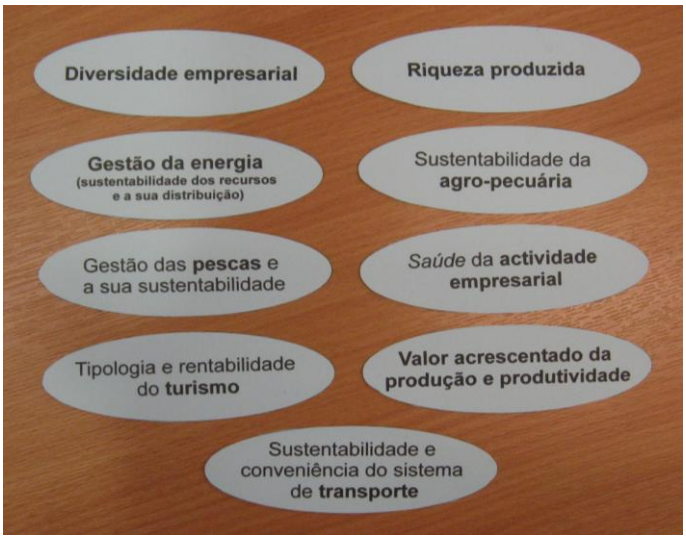





Criteria activity:

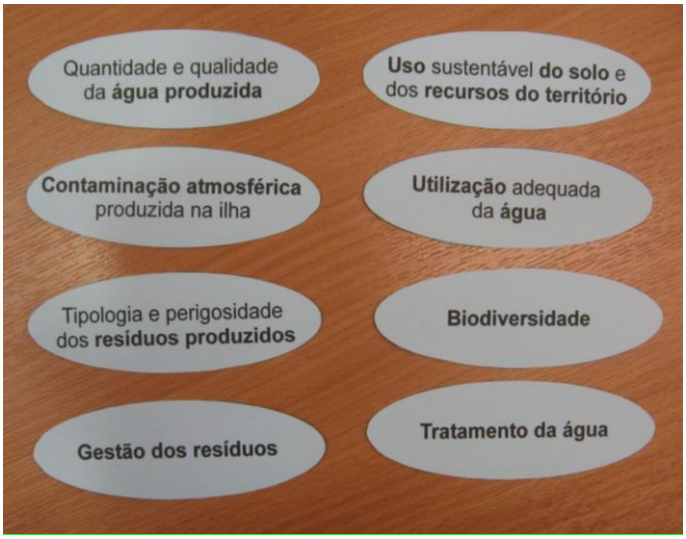



Economic criteria (cards):

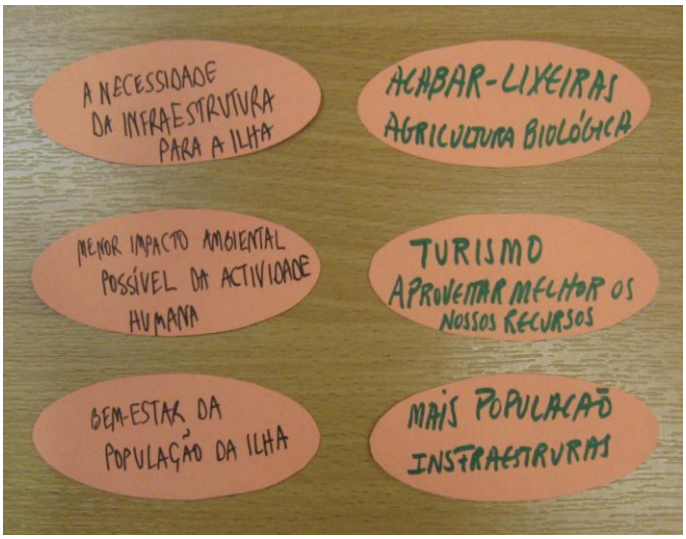


Social criteria (cards):

Environmental criteria (cards):



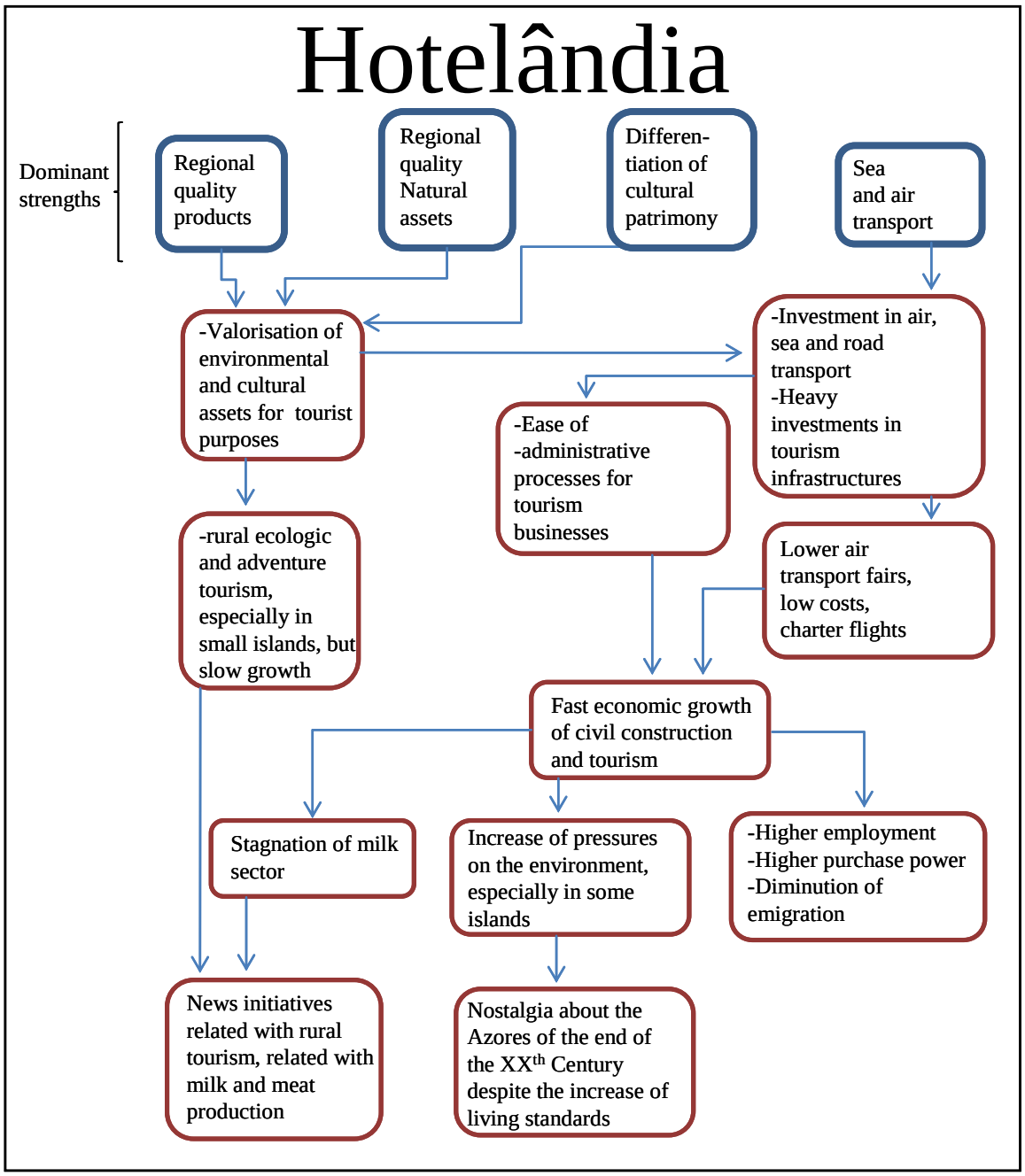
Criteria proposed in the focus groups (cards):



Focus group	**Additional criteria proposed in the focus groups**	**Additional criteria proposed in the focus groups (Portuguese)**
Farmers	More population	*Mais população*
Farmers	Infrastructures	*Infraestruturas*
Farmers	Close the open dumps	*Acabar-lixeiras*
Farmers	Organic farming	*Agricultura biológica*
Farmers	Tourism	*Turismo*)
Farmers	Better use of local resources	*Aproveitar melhor os nossos recursos*
St Cruz das Flores	Lower environmental impact of human activity	*Menor impacto possível da actividade humana*
St Cruz das Flores	Island population well-being	*Bem-estar da população da ilha*
St Cruz das Flores	Need of infrastructures for the island	*A necessidade de infraestrutura para a ilha*

9 - *PREDSA*'S SCENARIOS:

Figure A9.1*: Hotelândia* scenario (Perspectives for Sustainability in the Autonomous Region of the Azores, 2006[1])



[1] *Perspectivas para a sustentavilidade na Região Autónoma dos Açores, Contributo para a elaboração de um plano regional de desenvolvimento sustentável* (May 2006) Coordination: Secretaria Regional do Ambiente e do Mar - Direcção Regional do Ordenamento do Território e dos Recursos Hídricos. Available at: http://sra.azores.gov.pt/predsa/

Figure A9.2*: Lactogenia* scenario (Perspectives for Sustainability in the Autonomous Region of the Azores, 2006)

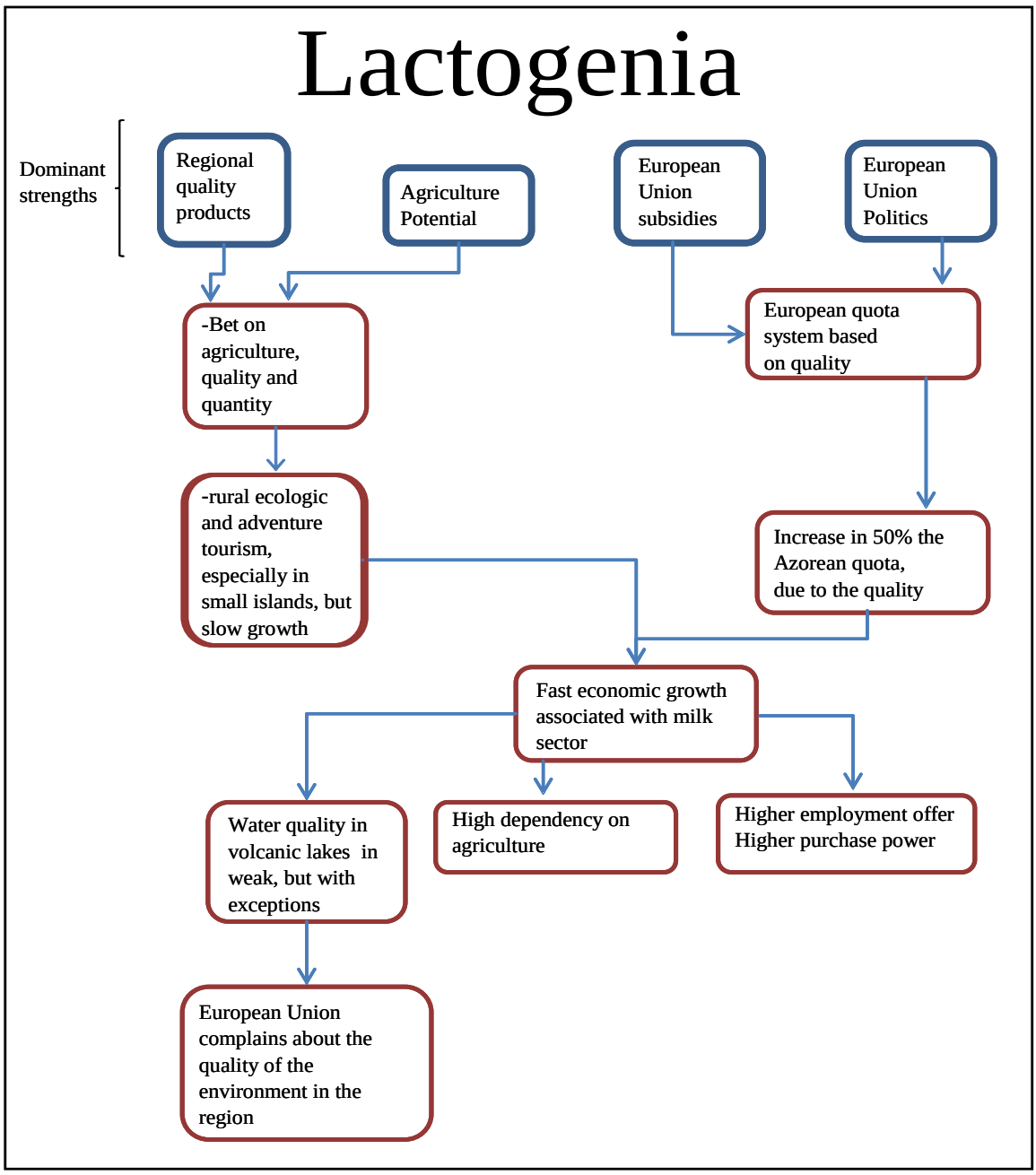


Figure A9.3*: Ecotopia* scenario (Perspectives for Sustainability in the Autonomous Region of the Azores, 2006)

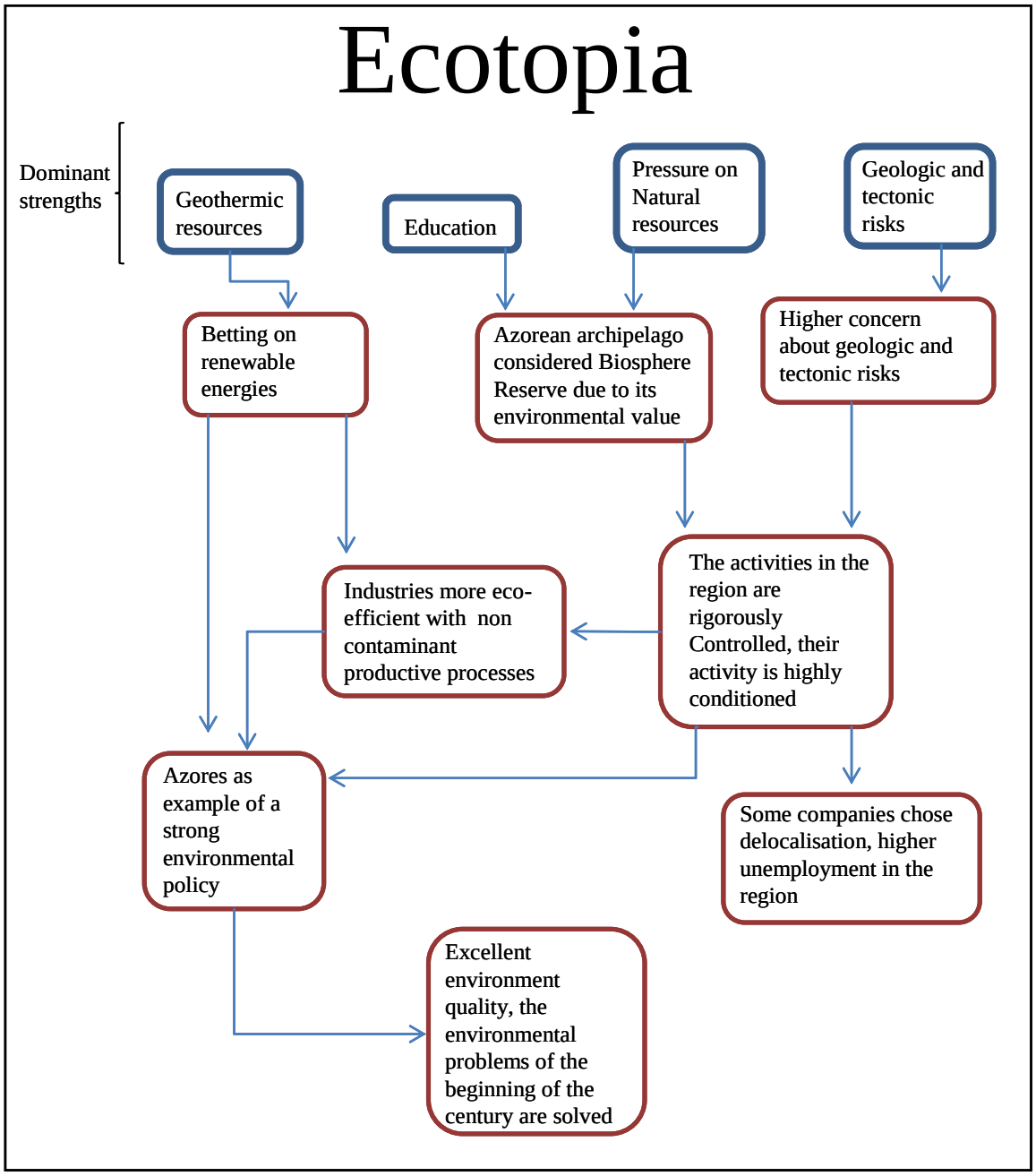


Figure A9.4*: Sociopolis* scenario (Perspectives for Sustainability in the Autonomous Region of the Azores, 2006)

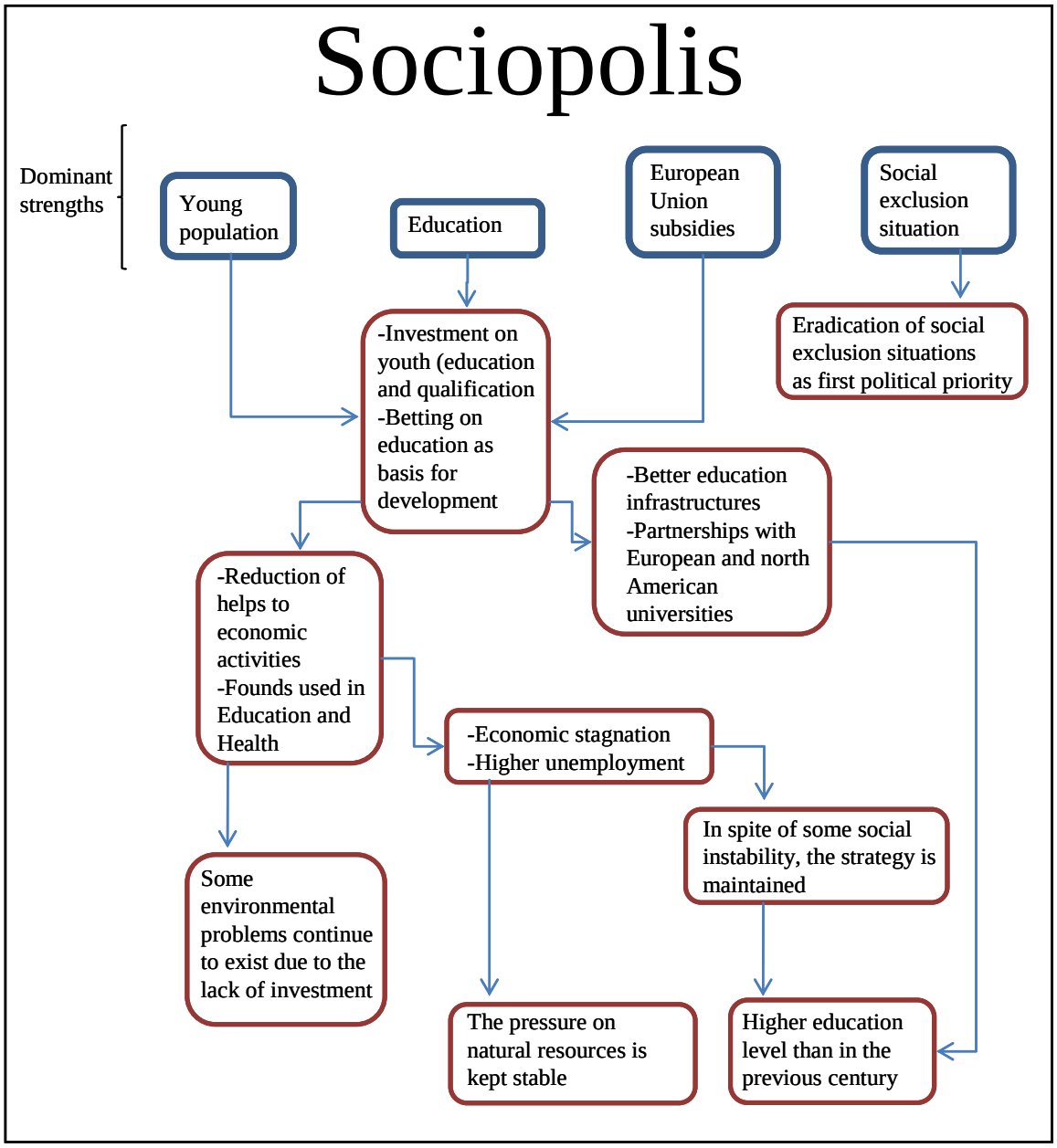
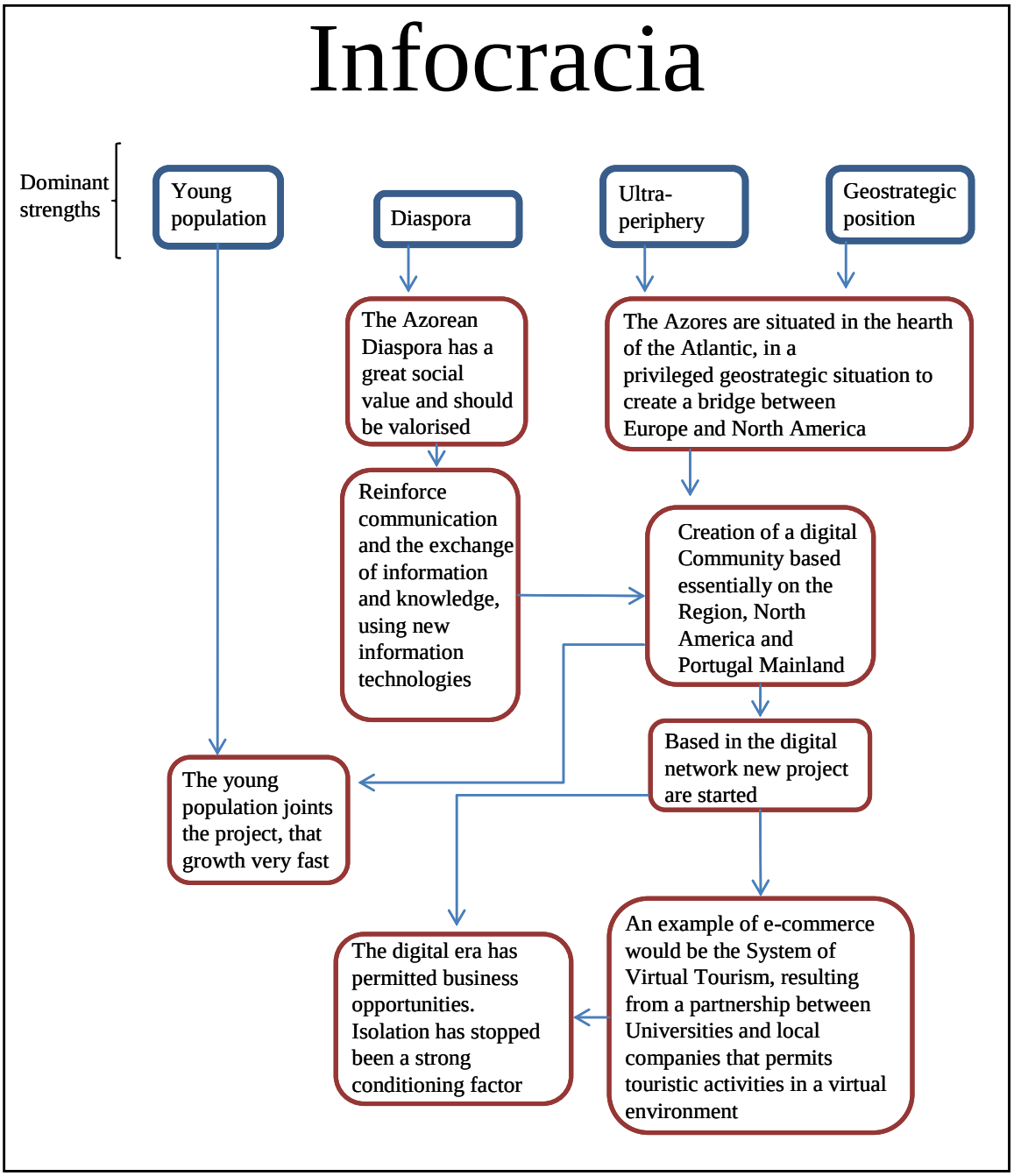


Figure A9.5*: Infocracia* scenario (Perspectives for Sustainability in the Autonomous Region of the Azores, 2006)



10 - SCOPING INTERVIEWS, SCRIPTS:

A typical scoping interview was realized following this model:

QUESTION 1: Develop vision of the Island development

QUESTION 2: Describe the vision for the following key sectors:

- Tourism
- Nature conservation
- Agriculture
- Forestry
- Fishery
- Industry and trade
- Communications
- Education
- Energy

QUESTION 3: Use the note sheet to write a keyword or key sentence that summarizes your vision for the island in 2030, you can use the boxes for 2015 and 2020 to explore transitions.
The interviewees could use the note sheet during the entire interview if they wanted to increase or develop their ideas. As some interviewees seemed reluctant with this tool they were not systematically pushed to fill all the boxes (2015 and 2020).

QUESTION 4: Considering *PReDSA* scenarios[2] (Hotelândia, Lactogenia, Ecotopia, Sociopolis and Infocracia) which would be the scenario or the combination of scenarios that correspond with your vision of the island.

QUESTION 5: What is the role of the PROTA in this transition?

QUESTION 6: Which local projects (public or private) or type of projects would correspond with your vision?

QUESTION 7: How does the:

- actual financial crisis
- politic changes in locally, in the region or nationally
- natural island park creation
- potential UNESCO Biosphere Reserve declaration
- communitarian subsidize policies changes (mainly in the European Agriculture Polity) could affect the Island development?

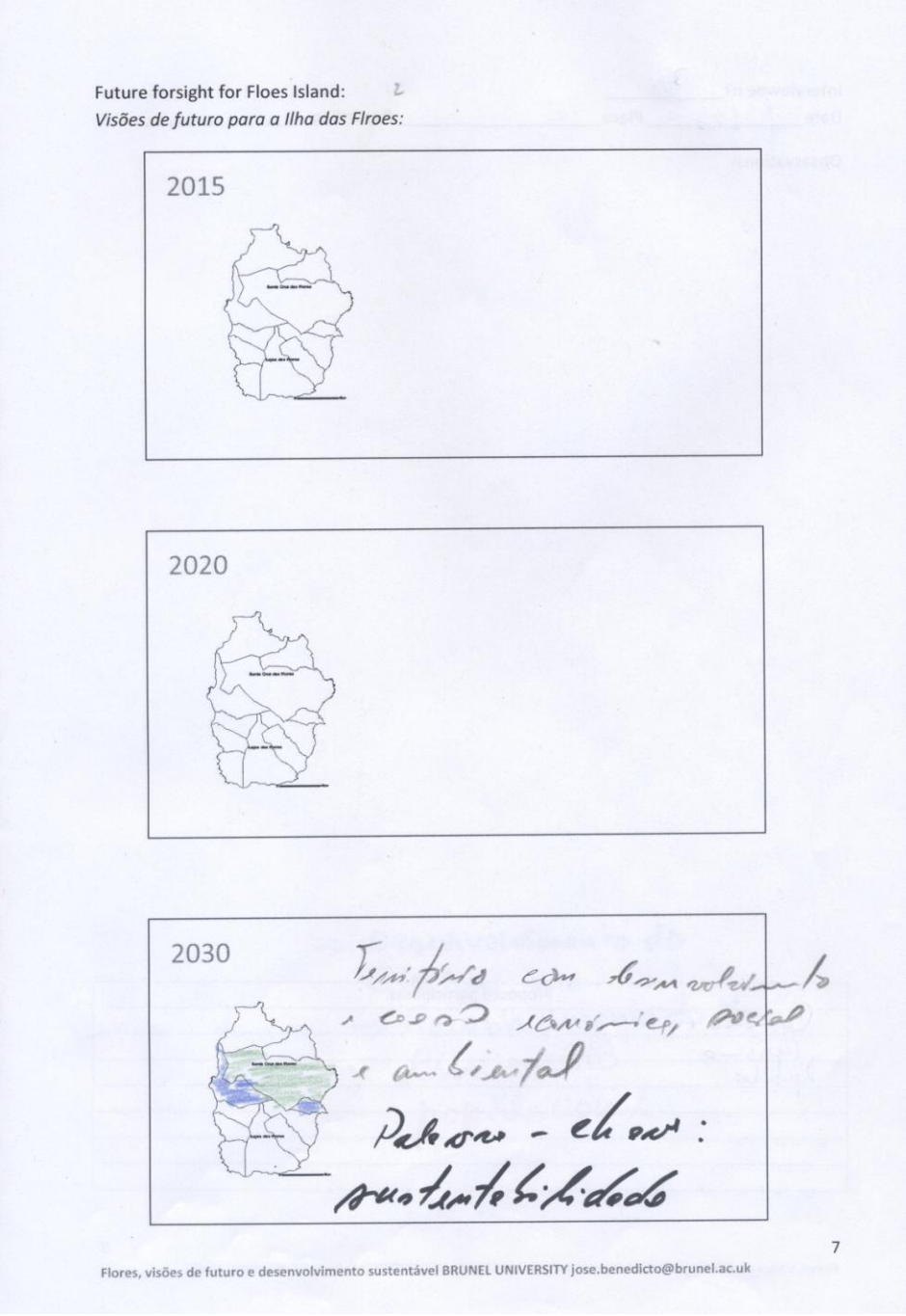
QUESTION 8: Propose potential participants for the project.

[2] In general interviewees did not had a very deep knowledge of regional plans (*PReDSA* and PROTA). A short introduction of *PReDSA* scenarios was done. Due to this specific questions on PROTA program were not asked.

11 - SCOPING INTERVIEW (example):

Scoping interview to the regional manager of the entrepreneurship support services [João B.].

Note sheet:



Interview transcript:

Interviewee nº 2 1/04/09 PDL João B. – Entrepreneurship specialist based in Ponta Delgada (São Miguel)

Researcher
[Explanation of the project]

João B.
In the work that we do here, it is very hard to have a time horizon such as 2030. All the ideas that I am going to develop are my opinions as a manager of this regional directory [economy], as the general manager of the Entrepreneurship support services responsible for the network of agencies but it is mainly a personal point of view. Normally we work with a very short time horizon in this regional directory. Our time horizon is 2013. They are fixed by the Common European framework of reference which is our main reference. Why do we work with a very close time horizon? Because the strategy, the vision, not only for one island but for the Region, is out of our competencies, it is a competency of the regional government, the administration, us, we do not have to define this strategy. Obviously this does not prevent me for having an opinion about that. For Flores Island in 2030, I confess that I had never thought about that, but I would like to see… obviously my point of view is biased by my work related to economy and management. Other people would talk about other aspect, obviously. Let me think about a vision for Flores Island… I will not be able to draw [on the note sheet].

Researcher
Do not worry, feel free.

João B.
What is happening in Flores has happened on other islands, there is a problem with the lack of self-sufficiency, I do not think that we can say that Flores will be self-sufficient in 2030, obviously the island will always import products, petrol for instance. But this should be coherent with different scenarios, the environmental, the economic and the social. So what I would write here is related to our mission, more related with the companies, more economic: cohesion in the economic development, on one hand, and social on the other, and for Flores Island also environmental. These factors are important on these islands. I would say that in a very general way: In 2030 we should have a territory developed in cohesion, it is not enough to develop, and it should have some homogeneity and sustainability in the economic network, the social factors and the environmental context [writing in the note sheet]. *I think that it is very important for Flores' case, for the other islands as well but especially for Flores. I do not know if this is what you wanted…*

Researcher
It is for you, here you have some colours, which represent Flores Island?

João B.
[laughts] *A green, I choose this one, it is complicated because we paint always this image with green, it is normal that we do so but I think that for Flores, as in other small islands and the Azores in general, it is not enough to paint only in green, to paint in green only refers to one dimension. Environmental sustainability… which is the colour of effectiveness and efficiency? Maybe blue? I would do that: green for*

nature and dark blue for the more professional aspects. Do you want me to paint the island?

Researcher
If your want.

João B.
I recognize that I am talking about an island that I know in numbers, I have never been there.

Researcher
Never? But you have an idea...

João B.
I know the indicators, I know the activity, I have a very close relation because we have an office there, I am very often in contact with them. But physically I have never been there. These are the two islands where I have never been: Corvo and Flores. I was planning to go there last year, but I could not because of the weather. I am going to use at least these two colours [painting], *I try to symbolize the harmony of both aspects, it is not easy.*

Research
But this is one of the bases for sustainability. Which is the key world that your would use as a summary?

João B.
Only one word, I choose 'Sustainability'. I think that it is a clear adjective, in any of the contexts [economy, society and environment].

Researcher
In English it is called, triple bottom line.

João B.
Exactly, I have not asked you but if you want we can shift to English.

Researcher
Yes, if you want, because I am going to do my research in English.

João B.
Yes, it is normal to speak in English. We can shift to English.

Researcher
We can change now.

João B.
Perfect. [starting the interview in English] *It is basically, that sustainability is quite important for islands like Flores, and I am afraid, for the rest of the Archipelago also. We are only talking about Flores Island but it is always on the back of my mind that it is important for all the islands.*

Researcher
I have like… in another interview, the interviewee said that people like the Azores because each island is like a state, in the sense that they have a kind of, not independency, but autonomy, limited, but a kind of autonomy, because you have a representation of the Government in a small scale.

João B.
The thing is, it not just that, it is not only formal, it is also material because yes, there is a fact that the administration is decentralized and you do get services on all the islands obviously you won't get all the services but you get a mean to get those services. For instance, just to give you an example, the regional secretary for the economy does have on each island, except for Corvo Island someone that represents their all secretary it doesn't have exactly the same services but it has a connection, so in this respect, in this regard yes, they are I would not say autonomous but they are self sufficient, but more than that, it is not just a matter of the administration, it is a matter of culture, it is a matter of the people themselves on each island you will find a different universe, a macrocosm not only in the formal aspects but also on the culture of the people, on the way of the people. In one hand it is one of the most interesting aspects of the archipelago, on the other hand let say something like a nightmare when it comes to manage the island. It is hard work to do because of that.

Researcher
I imagine, so it is another challenge.

João B.
It is a permanent challenge. It wont go away, it will never be completed, a sort of speak, it will always be a chance for improvement. The documents that you refer to, for tourism and for the land distribution and organisation. What they try to do is this; they try to face that challenge and try to get a vision for the all archipelago and this is quite hard to do, this is why those documents have to be constantly and constantly moved. They cannot be something that a static document that you just leave there and rest for ten years. It just fails if they do so.

Researcher
So it is like a constant improvement, a constant learning, não?

João B.
Constant development, yes.

Researcher
Ok, just to come back to my questions. It is very interesting so, we are going to comeback in the conversation, so I do not forget to mention everything. So coming back to the PReDSA, you know the scenarios are Hotelândia, which is related to tourism, Lactogenia, with milk production, cows… Ecotopia with ecologic utopia, Sociopolis which is based on society and Infocracia which will be the society based in information techniques and communication. We agree that these scenarios are very contrasted and that they were produced to, I mean, they objective is supposed to be to create discussion. But what do you think are the scenarios de most adapted for the island, I mean, not one but, you know, probably every scenario has its own… but what are the two that represent more, that could be more… what is top of mind when you think about Flores?

João B.
The thing is and I have to tell you this, the information that I have about this document is little because we don't have to deal with it everyday, as I told you we do not set the guide lines when it comes to strategy so we have to work with that strategy once it is established but when it comes to Flores, and if I have to choose one or two or tree of those scenarios that will contribute the most to the vision that is in my mind for the island I will choose obviously the one related to tourism but I do not know if I am seeing the same picture in my mind that the people that wrote the document were. Because… yeah

Researcher
I had the chance of reading it and the vision for… of Hotelandia, tourism, scenario for small islands such as Corvo, and Flores and Graciosa, will be more related with small structures, not… you know, so there is a two speed tourism and of course Flores would be like more Agrotourism, Ecotourism and Nature tourism.

João B.
The thing is when I am talking about this scenario this is what I am picturing in my mind and I am always considering the economy of the suggestion. Why? Because I really do believe that this will provide sustainability. Why? It has two aspects that in my mind, in my opinion are really important. First of all: it promotes the environmental issues, because you have to keep it saved, you have to keep it clean because this will be your main attractiveness, first and foremost. Then again, tourism, which kind of tourism? What we are talking here is possibly and this is my way of looking at these things. What we are talking here could be high end tourism. If you look at some of the pacific islands, where you cannot build any more concrete and you have tourism installations, tourism boarding that is way of the chart when it come to quality, and obviously, when it come to price to. Because what you are giving people is not a week of holiday it is an experience of life time. So when I chose, or when I choose this scenario it is always having these two realities in mind. First of foremost the environment because this is what we use to get the ground for the business itself and then the business must not destroy its own ground. So it has to be very careful. Then again, you ask me to choose at least one more. I will choose the one related to the information technologies. Why? Because this is basic for any island, especially a group of small islands, nine small islands gathered all over the north Atlantic. This will always be, let me put this in another way, they should always be a major concern, they should always be an area where we should be investing, where we should be learning, exploring and trying to develop… again, sustainability, on the long ground for 2030, something like this I choose these two.

Researcher
Ok, perfect. And if I understand, also when you choose tourism you also relate it with nature conservation?

João B.
Obviously. Because this is the ground for that kind of tourism if you loose that you have nothing, you have a small island with the bigger hotel and this does not work. You cannot compete with the Canary Islands or with the Seychelles. So we have to offer a really different product. You mention the biosphere reserve, and Corvo is already tagged but if Flores were to be tagged also that will give us a start but then again, we have to be very careful, local authorities have to be very careful. In Corvo island there is a huge problem now because they have an open sky dumpsite

where the municipality troughs the garbage. This does not go well with the Reserve of the Biosphere. This are not just words, this are important categorizations, because will used them or we would use them by 2030 to sell the island sort of speak and to sell that unique experience, this is tourism who want this obviously.

Researcher
Ok, and also in that sense, what could be the PROTA policies that go in that direction? What kind of actions, what kind of projects, maybe public and private could lead to this vision?

João B.
First of all, when it comes to, and again, I am speaking economy wise, when it comes to investing, if we are looking down the line to 2030, we really should be pointing to the private sector and leaving the public sector just to give the guide lines. Obviously there has to be a lot of restrain on the private sector because once a specific product or a specific business is profitable then you will have a gold rush. The role of the government and this is not administration obviously this is not administration, this is strategy and the POTRAA plan should give and tries to give this vision, is to establish guide lines. It is trying to say that; this is important for this island and maybe important for one of the other islands or not. Then again, as we mentioned before, that specific document has to be looked out really carefully because, and you said that at the beginning of our conversation it was made, it was build in a different time and things are changing and will change rapidly on the next tree to five years, who knows what will happen in 2030? So the plan has to be ready to not only absorb that information but to react or to act before things happen so I would say that the private sector would have to be aligned by the government when it comes to nature preservation, when it comes to management waste, management waste is a big problem when you try to focus your goal on tourism so all these things have to thought of really carefully before things happen. What the PROTA does now a day is just to establish two things, and I red the document one year ago I think but I read it, it is just mainly two things. It set some rules regarding the land but it does not go too far, why? Because the municipalities, city halls, have something to say and have a strong hold on that part but nevertheless that document sets some guide lines when it comes to the land, and what you can do and what you should do in each part of the land. Even in a small island like Flores. And then what it does is, it sets tourism wise not only boarding but activities services the possibilities, the possibilities that you can offer. Your work will, I would not say it will stop into the wall, but will trouble in the small detail, when it comes to the PROTA and when it comes to the other documents, and you said that, the island of Flores will never be looked at as a single island, at least it will be always be looked at in assembling, in some sort of assembling with Corvo Island. Why? And, tourism wise again, this is really important because you can sell an all different experience if you can rely on that other small island. Obviously that is just a small part but you have to take that into account also. So to POTRAA does this, it combines these two aspects, I don't know if it does this effectively or not because you still have to take into account what city hall has to say. And the rest of your route. But I do believe that it does set forward a set of rules they are really important and one of the rules we already discussed, it tries to say to the private sector: well, you are welcomed to invest, you are welcomed to develop in Flores island but have in mind that this is the vision, it doesn't go so far as to 2030 not specifically but it does set for does guide lines.

Researcher

It goes to 2015, which a middle term compared to 2030. Ok, also, just to, I think more or less we have answered to this question. What do you think are the strategic sectors in Flores, because we have mentioned tourism and communication systems but also there is an agriculture activity and a forestry activity and also fisheries. So considering also these ones what do you think, I mean, of course we do not say that none is important, what do you think are the key strategic sectors?

João B.

The thing is… why I am putting so a strong way on tourism? Because I really do believe that tourism is a way to go if you want to get that sustainability point. Why? Because forest and agriculture are not sustainable on the long run, they are not sustainable for São Miguel Island which has an area of 10 or 12 times Flores and we have seen… and then I have this experience, because I am from this island, I am from São Miguel, I grow up here although I spend several years away, I do know my island. And I know what, for example, the development of Agriculture as strategic, economic sector; I know what this can do to an island. And you have to be really really careful, to give you an example: our lakes are all contaminated with pesticides and with other chemicals that are used in farming land and cattle land, so I would not want that for Flores. Been such a small ecosystem, Flores, and lets consider the island an ecosystem, something like a closed ecosystem, if you look at the island like this you will see that active policies when it comes to agriculture, cattle producing, so agriculture… and we are talking about, a little bit about fisheries to, it could be devastating for the island. So when you talk about those sectors, the primary sector, you always have to be very careful and this is my opinion, you have to be very careful with the sort of development that you are advocating. And so I would not consider it strategic in this sense, obviously it has a great value. First of all, for auto-consumption, firstly, there is nothing wrong with that but the thing is I look at the present and Flores and other islands, Flores is not the only case, are no way neither self-sufficient and they will never be because it makes no sense, the thing is if you tell me that we have discovered something in Flores, some sort of microclimate, that is good for producing high quality strawberries that is quite different, we are not talking about mass farming, farming, not only agriculture but the rest of the activities, so I do not consider it strategic because if you would economically this would mean ruining the other potential that the island has and really, it has. Because for agriculture you have to have land, available land, and Flores does not have available land. That is basic. So, it will always have an important role for the people living in Flores, but when it comes to looking at the trade balance it won't have any significance. For example, it can be important even for tourism, I visited a restaurant in São Jorge, a restaurant were the biff you could see the cows on the land next door to the restaurant, the thing is, the owner had this vision and he said to the client was: what I am giving you is free from pesticides, free from chemicals, free from hormones and stuff like that. So agriculture, forest and agriculture, in broad terms, will always display an important role. Is it a strategic one when it comes to the economy? I really don't believe so. About the fisheries, we have to be really careful again because it is a really soft balance; we are hanging on by a threat. What I mean by this is, it is a fragile ecosystem. You have to be really really careful, what we do. Because again, if it is for consumption, for local consumption then, there is a small impact, global wise. What we have witnessed in the past two decades, it is a warning sign to the future. For example there was this species of mollusc on the rocks.

Researcher
The Lapa [limpet].

João B.
Yes, a sort of Lapa and we had that for many generations, my father remembers it. But I have never seen that specific species, why? Because it was decimated. And it is possible even in a small arquipelago of 250,000 people it is possible to decimate a specific species. How? Just saying that is strategic. Say that that this fishery is strategic and money will be flowed in to that activity, into that economic activity. And we will develop our activity, having more or less regard for the environment. And again, because we are speaking about Flores island that could be, say at least difficult, difficult to balance thing. So I would not say that those sectors will be strategic in the future. If you say that, in Flores there are specific conditions for research and development programs, in the areas of fisheries, or in the agriculture. Fine by me. Because what you produce is not a cow, it is not a tree, it is knowledge. And that does not ruin the environment and that you can export, you can take it off the island without almost any cost. You do not have to pay for a boat to export. So that is why I chose tourism and the information age, sort of speak. No I do not consider the primary sectors strategic because of this, because it has, and if we are talking on a long run, a long term, and we are talking about 2030 this could have some serious negative impact on the island ecosystem.

Researcher
And also just, what is your vision of education? What is your vision of the role of education? For this island?

João B.
The thing is. It is not only for Flores; obviously it is for the Azores. But you have two main concerns education wise. Obviously Flores won't have its own system of education, it will have to obey by the laws of the land but they are two main issues. First do you want educated, graduated people with specific knowledge to do some kind of tasks? And this is what we call in Portugal, middle teaching because it is somewhere between high school and University, something like that. What I actually mean it is technical schools that give you a degree that is higher that high school but lower than University. So, but it does give you knowledge to do a specific task. And in that specific subject you know all that is to know. It is quite different than University, especially in Portugal where you have a degree and it gives you this broad basic line, really broad. To work on it does not give you a specific knowledge, specific tools to work on a specific project. This is one of the things, education should always be concerned also to provide some sort of succession for the population because nowadays what happens is this. You will have younger people leaving the island going for their studies abroad, even on the mainland or other countries and then they would not return, this is something that happens in small islands and it happens here in São Miguel. So it happens in a larger degree when it comes to Flores. So first of all, education displays an important role there to. Because if you have someone that is willing, that is available, to stay on the island and to help reach this vision, so you have to give them tools to work with. This is one matter. The other matter is education, but not in the sense of schools, but education in the broadest meaning of the thing.

Researcher
Citizenship education?

João B.
Basically yes, that. So it is more than school, school that favourites society, there is a long way to go. Not only in Flores, even in São Miguel. But lets talk about Flores. If we want to get by 2030, let just see these two scenarios. There is a strong hope on tourism. A lot has to change went it comes to the local culture. People will have to look at their island in a different way. Some sort of value. A common value that belongs to them all, and to us all, but a value that has to be preserved and more than that: We have to add some value to that already existing value. So they have natural resources but then you have to educate the people. Again, in schools, in the families, in society, not only to take advantage of that patrimony, of that environmental value, but also to add something in it. So this is in a broader scheme of things, this will be the role, I will say the main task, and the more difficult task education has.

Researcher
Ok, thank you. And just, another question could be, we have mentioned it very briefly but what do you think will be the effect of the actual crisis? Finance and economic crisis to these middle term and long term visions for the island.

João B.
The thing is. The actual financial crisis that it developing into unfortunately an economic crisis will have impacts on Flores Island and it will have the late impacts. That is to say that, when in Lisbon people were shaking and banks were shaking with the financial crisis, here in São Miguel, we were still waiting for it to come. Things do, even in the economic factors of things, things do tend to get to the island later on. So, Flores Island will suffer the effects of the financial crisis, the negative effect of the financial crisis, for some years, but I really do believe that this will not go; I really don't believe that by 2015 we will be speaking about that. I really don't. The thing is, and this is only financially speaking. What is needed for Flores Island and this will be some kind of obstacle, or present some obstacles, you will not find on the island itself. Financially, if we are talking about investing in the island, it will have to come from the exterior, and the exterior here means everything. From this island, from the mainland, from other countries… because there is no economic power on the island, or at least not sufficient enough to counter act effects of financial crisis like this one we are dealing with. This is a sad reality for places like Flores because I really do believe that will never by themselves, it is not tragic, it is sad, because by themselves they will, even if we go for this let us say, tourism related scenario, the island itself will not be prepared to counter act negative financial effects on crisis situations, but in reality it does not have to be prepared for that because the archipelago has to be prepared for that and foremost the country has to be prepared. Because although we are an autonomous region there still a lot that is, how should say this, that is kept a side and is a responsibility of central government, so the island does not have to worry too much about certain aspects. What it does have to worry about is maintaining the things that we discussed before, that bases that will allow investment to be made there, that will allow sustainability to be achieved, because once you get there at the sustainable level then it is hard to come down again, you just have to keep it there, which is hard work but it is easier to maintain that level than to get to that level. So it is not a matter of having investment done by 2030 on the island and then say now we are moving to somewhere else because, this is not, this is what happens with auto factories, for example, they will move where the labour is cheaper, when you get to that point, when you have the balance between economy, environment, society, then

you have a all unique experience to offer to someone else. How will this person get this unique experience somewhere else? They won't. So it is hard work getting there but once you get there you just have to keep it. Again, financially wise it does not mean that the island on itself will be more able to counter act the effect of crises, it won't, it will never be.

Researcher
And also some changes in European polities? In 2013 there is a change of the 'Quadro Comunitário' [European framewok], *and the economy in the archipelago is based in agriculture, based on agriculture policies, especially milk production, so changes, in this will also affect the economy structure of the island?*

João B.
Deeply. Deeply. And again, I will speak only about Flores but could speak about any other island. When the PAC policies, the agricultural policies change, and when they shift, this has a strong impact on any of the Azorean island. Why? Because since we are so far away from the centres of decision, almost all of our primary sector is helped, and this is to use a euphemism, is helped by EU policies, so if the policies change, then the sector, the all sector itself changes. The thing it, I really do not believe that the PAC policies, the agricultural and fishery policies, EU policies, will permit Flores, or should permit Flores, to get a stronger hold on the primary sectors. Why? Because we have seen and this happened here in São Miguel, when there was a lot of money available for cows then a lot of forest was put down to have raiser, have pasture for the cows, and this is something that is really hard to undo. You don't just go there and plant tree and then… it is not the same, it is a fragile ecosystem. So, what I hope, and this is not what I image will happen, but what I hope is that the agricultural and fisheries EU policies will not promote intensive farming. That promotes sustainable farming. That's fine by me. But not intensive farming. They really have to differentiate we are talking about the fields on the south of Madrid where they have greenhouses to produce strawberries, just the area is bigger that São Miguel. And this is good. This is good, because it was sustainable for that specific area and another thing, it is the same EU policies that have to make the difference, to set the [rules] for this place and then for a place like Flores where the balance is quite more fragile and where changes are not easily undone. If you loose a bird species what will you do? So and we had this kind of problems on the bigger islands like São Miguel. So what make the same mistakes in Flores? It makes a lot of sense.

Researcher
And also I… yeah.

João B.
Did you get lost?

Researcher
No, no, I was just trying to make like a kind of conclusion, but you said it very well. Just one thing, we haven't finish yet but just before I forgot can you just write your key work, it was sustainability…[…]

João B.
I really do believe that this word is not only important because it is a strong word, because it is important for small fragile ecosystems. If your target is sustainability

then it is harder to go wrong. If your target is a strong primary sector, because it can lead to exports, then you might miss this [sustainability].

Researcher
Now I remember what I wanted to say. In São Miguel, we had the cycle of citric production, then corn, now we are in the cycle the cow.

João B.
It will fail.

Researcher
How will do the island? Now we talk about the island. Will do the island another mistake? It is this a fatality or not?

João B.
It is a cultural problem. After the Portuguese democratic revolution, the 25th of April all the doors started to open and we realised the possibilities. Mainly economical possibilities. And we started to invest again, the same problem. We started to invest in specific areas that will have some kind of return, not only when it comes to consumption obviously but mainly when it comes to export. Yes you are right, orange, wheat, corn… in a smaller degree alcohol and leader, we had here on São Miguel island, we developed an enterprise in leader. All of this failed. Why? Because again, the environment has always a fundamental role. Why? Because it is really fragile. You cannot explore, or exploit the environment in such a way for so long. It will crack, it will fall. Cows are falling, sort of speak, right now. So, are we destined to make the same mistakes? I really don't know, I hope not, but on the long run, it depends strongly on the regional government, it depends strongly on having a strategy that reaches so far as 20 years in the future, and nowadays this just not happen. And it does not happen in Portugal, it is just not an Azorean problem, it is a Portuguese problem. Our neighbours from Spain face, because we share a good part of our history, our culture and our character even. The way we look at things is similar in some ways. So, this is why I choose this work to be the key word, not because it is, but because it has to be, because all the else has failed and it will fail again. Not only for Flores but for the archipelago has a all. It is not sustainable, on the long run, it will crack, it will fall, and it will leave you with no value, because by then it will have ruin the environment value of the land. And then you will be left with nothing. Not the economic value of the economical activity, let say farming, and then you will have again, we won't have the other value. And then you will have nothing to decide. Nowadays you may decide, you may choose the path you want to go to try to get here, by then if you aiming to get at sustainability, by then you won't have a choice, things will be ruined and then people will move, people will move. This has happened in the past, some centuries ago, people moved.

Researcher
Now I have a question. Related to your specific field. What is your vision for industry and entrepreneurship? We have talked before about private initiatives that should consider the frame; that should be… that entrepreneur should be active. So, what is your?

João B.
Big changes have to happen. Why? And this is what I was getting at when I talked about education but in a broadest sense. One, and this is one of the things we were

trying to do. Obviously, we are a small body of the administration and we have limited resources, but this is one of the things we are trying to do and we are trying to build partnerships to do this in a large scale, is to get entrepreneurship on the spot light. Entrepreneurship, but not only when it come to business, not only when it comes to create new businesses but entrepreneurship as a way of life, as a way of looking at life. You can be an entrepreneur working for somebody else, you can be an entrepreneur in the middle of your family, on you personal life and you can be an entrepreneur when it comes to businesses.

Researcher
Maybe you can also be an entrepreneur when it comes to sustainability and ecology.

João B.
Obviously. You will have to be, because you will have to be proactive, you cannot react, you have to think what are the possibilities for the future and act now, this is to be an entrepreneur, you will have to be dynamic, you will have to be open minded, all of these are characteristics of the entrepreneurs. That is what we are trying to develop projects for…I do not want to use the expression for the teaching of entrepreneurship, but for the understanding of entrepreneurship, the local culture, and Flores will be worst than São Miguel, local culture is quite adverse to these aspects of entrepreneurship, we have been left alone and unattended for centuries and centuries and this develops a closed society, this is what usually happens on islands like this, and you will see the differences between Flores islands and the central group islands that always had a sense of group, always had one. Here is São Miguel you always had the sense of been alone. And this closes the society, and a closed the society is the worst danger, the worst menace when it comes to entrepreneurship. You do not act, you react. You do not take the lead, you follow someone else lead. This is dangerous, this is quite dangerous. This is one of the things, possibly the most important thing, and I would like to see developed, increase discussed when it comes to islands like Flores and the rest of the Archipelago.

Researcher
And also I think it might be a foreign interest, maybe foreigners can have their own vision and their own entrepreneurship there, opening, and activating, so it is an opportunity.

João B.
It is possible because it has happened in the past, when you look at communities that received output information or information from abroad like Santa Maria and Terceira that had a big foreign community you see that possibilities do tend to arrive. Possibilities will open up. The thing is if you do not have local entrepreneurs those possibilities won't be taking advantage of. They will remain possibilities and you will have an occasional.

Researcher
Visionary person.

João B.
Yes. The guy that stands out of the crowd but that will only, that will be de exception that will not be the rule. And, if you are aiming at sustainability that has to be the

rule. Everybody has to have those kind of values on the personal life, on their jobs, on their businesses. It is basically the only way, you won't get there without having those values of entrepreneurship integrated into the local culture.

Researcher
I just have a very short question about political continuity in the region. It has been elections, a few months ago, and there is continuity in the government. So, do you think it is an opportunity because it will continue, especially these programs, these management programs, will continue? And what is your perception of that?

João B.
The thing is, this is the third mandate of the actual government, they have been in the government for… it will come out to 12 years, we have a limited democratic experience in the Azores. Because there hasn't been, from the revolution, and the revolution was in 74, we only had, not 2 governments, but 2 parties governing. We had a long right wing rain, sort of speak and then when it changed it changed to this left wing government. And it tends to settle. So, bitter as it may, elections gone, there are thing that are strategic and should not be changed, can they be changed? Yes. Our history tells us, even at central level, our history tells us that is the following government does not agree with that strategy then things will be changed. The way to go about this is not having the government decide the key factors, the global guide lines; it is having the regional parliament doing so. Why? Because if you to so, if the regional assembly, even if it has a majority of the party that is governing the region, the thing is the regional assembly, for the bad and the worst, represent the people, and if you have the major guide lines decided by this assembly then it is hard the new coming government to change that. Because, one thing is certain here, you won't get by 2030 and having sustainable environments, socially, economically, environmentally wise, if you do not set a target today and obviously, promoting changes, promoting debate, promoting small tunes of that strategy. But do not cutting that strategy in the half. And I really to believe, independently of the colour of the party that is ruling the region, then the strategic questions remain the same, if not it will be quite hard because by 2030 you will be again be discussing what will be the priorities for 2040. And one day we can wake up and see that it is just too late.

Researcher
So if every politic party is conscious of sustainability, they will keep it in the programs? Sustainability is not only a green party philosophy and now every party has its own idea of sustainability. They consider sustainability as a key stone.

João B.
The thing is you have to look at, and to watch for the executive branch of the past, to see if in reality, if the day to day life that strategy transforms itself into action, if it not then it is useless, and this must be the role of the government, to execute the strategy, not to corrupt it, not to ruin it, not to change it. Fine tune it, maybe, not to change it. This is the role of the legislative. Let's hope for the Azores, and for many parts of the EU that this is the case.

Researcher
Could you propose participants at the local level…

12 - STANDARD AND BALANCED DEVELOPMENT SCENARIOS:

The Standard and Balanced development scenarios are displayed as presented to the MCM interviewees. The contributions made by the lay citizens in the focus groups appear in underlined blue, they are identified by a code presented in Table A12.1.

Table A12.1: Focus groups, code for individual participants

Focus groups	Code for individual participants
Young adults	Y1, Y2…
Fishers	Fi1, Fi2…
Industry/handcraft	P1, P2…
Farmers	A1, A2…
Tourism	T1, T2…
Lajes das Flores	L1, L2…
Santa Cruz das Flores	S1, S2…

STANDARD DEVELOPMENT AND BALANCED DEVELOPMENT FINAL SCENARIOS (Portuguese version in Appendix 4.3)

STANDARD DEVELOPMENT

Standard development scenario is the scenario of the development through public investment in infrastructures, intensification in primary sector will permit to export some farming products (meat, milk and dairy products), tourism model will be more standardized (betting on the island opportunities but not prioritizing the lowest environmental impact) and water exploitation for commercial aims. Somehow this is already the way that has been followed [T1], even if the scenario generates some "apprehension" [A2]. Specially agriculture role *"produce more and more; this is a little bit aggressive"* [A2]. But the island requires public investment and this seems a scenario that permits wealth generation, *"what we want is more and more wealth"* [Fi1] and not all the investments in infrastructures might have a strong environmental impact [L3], as *"people are much more aware on the environmental issues"* [L3].

Tourism: Tourism is considered as one of the only sectors with a future, since there is a strong investment in tourism, trying to attract a high number of tourists, development of conventional hotels, *"what we need is a 'mass' tourism, where you have what ever you want, where the environment must be protected but where there is something that I like to do"* [T1] and flights' prices decrease. Important communication campaigns, as it is important to disclose what the island has [T3], to increase tourists' venues, but the aim is not to have mass tourism (huge increase in numbers) [T], as this tourism harms. The model does not specify specific markets or the environmental impact of the activities or infrastructures (for instance in sport fishing, building or golf). Rural tourism does not seem systematically viable, "*re-build, renovate… but then when it is time to run the investment it is not appropriate*" [T2].

> "*If effectively there was a development in the sense of accessibilities development and lower price of these accessibilities I think that Flores could have the ambition of support their economy on tourism*" Francisco T. Organization supporting investment in rural areas

Farming and fishery: farmers are trained for adapted and optimized farming techniques. Their activity is more focused in efficient production and exportation strategies (dairy products and meat). Farming is not necessarily environmentally friendly. Exportation requires a more intensive production system that might unbalance natural ecosystems; there is a danger of "*distortion*" [S1]. But on the other hand, as farming is not so developed, "*it is possible to increase production and protect what we have*" [L1] and "*meat and milk production are good for the island*" [Fi2].
Fishery has a productive orientation and it is oriented to exportation, this could endanger some species. Upgrade of Santa Cruz das Flores' harbour, quotas' increasing and "*improvement of fish's exportation*" [Fi] would foster fishery sector and increase catches.

> "*I defend Laurel forest (Azorean native forest) in sloping and rough area where cattle cannot go*" Joaquim G. Professor at the Universidade dos Açores

Key investments: investments will have as objective to attract more population (employment creation and implementation of attractive infrastructures). Some examples of these possible investments could be: improve transport infrastructures to ease exportation and to support demographic and tourism increase (airport and port). Important upgrade of the island's roads is not required. Warehouse, conservation, transformation and exportation of meat and fish projects [T] and projects to bottle water [A&T] would go into that direction. Increase also the island health services with the population increasing, developing attractive (and maybe oversized) touristic installation. Possible creation of a vocational school adapted to the island size and work market [Y2], with the objective of training population in strategic sectors and mainly oriented to productivity.

> *"... in islands such as Flores and other very distant to main centres are the ones that need big transport and communication structures*" Raúl H. Representative of the Secretary for Agriculture

Long term strategy: the objective is an important population increase, reversing the actual tendency. Efforts are made to reach the bigger islands' standards, cohesion. But some aspects are neglected, for instance there are not efforts done to preserve the island patrimony, as it can be in part sacrificed to reach the objectives, but "*all these projects* (building) *bring to the island new people that at the end might leave the island*" [I1].

> *"...All this creates some socio-economic activity, it fosters trade, it fosters agriculture, promotes development. Because what an island needs is people, but people do not settle there if there is not economy.*" Joaquim G. Professor at the Universidade dos Açores

Possible negative effects if this development model is not successful: if the efforts done to develop the island do not reach the objectives, some consequences could be that: the population does not increase, the investments done have harmed the ecosystems and dependency to the exterior is increased. Some people think that the island is already heading in that direction, some infrastructures already existing are underutilized [S1] and assertions such as: "we already have a white elephant" [T3] and "investments in Flores are done in the wrong places" [T1] invite to think that.

BALANCED DEVELOPMENT

Balanced development corresponds to a scenario of development through high environment quality and value of the island own characteristics (nature and living experience), for instance betting on the Biosphere Reserve status. In this scenario, "*friendly with the environment*" [A2], prudent investments are essential. The infra-structures that would value the island must be designed thinking in tourism but mainly on the local inhabitants, they must prioritize the lowest impact, nature preservation, valuing the ecosystems' services and improving them, finally external dependency should also be reduced, as "*it is good to do something for not being dependant on the exterior*" [A1] (mainly about importations). This scenario, "*maybe utopian*" [I1], will require investments that the island does not have, but in general it has been considered better for the island, some people thing that the island should be oriented to that scenario [L3].

Tourism: based on long stays, quality, peace and quietness, nature, trying to reduce seasonality, "*not a lot* (of tourists) *but of quality, expending quite a lot of money*" [Fi2]. Tourism development would not be on detriment of local population well-being, locals could enjoy from the benefits of tourist activity, "*tourism development would be done after local development*" [I1]. Tourism would be advertised considering that a lot of people will never come and preparing the visitor for all the contingencies (for instance precipitations' frequency). As "*it values local characteristics and goods not what is artificially created*" [L1] betting would be on rural tourism that tries to use old buildings, implementing a plan for this tourism [Y2] and reinforcing training of professionals in this sector [T].

> *"It must bring added values to population and it must create conditions on the island, investment must be done on the island, but the island must also be located in the map* (advertised)" Armando F. Representative on the island of the Regional secretary for the environment and the sea

Agriculture and fisher: develop a local market to avoid importing fresh products. Training and information of the farmer on organic agriculture and nature conservation [A], they might have the capacity of certifying their products as organic, added value goods production for the island and possible exportation, and at the island level, generalization of returnable packaging. Genuine and conscious application of the UNESCO Biosphere Reserve and local development plans' indications, farming does not require to be fully organic, as this practice "*will only work in small places*" [I1], if farming is controlled it would not be "*environment unfriendly*" [Y2], it is possible to reach some of the objectives [A1].
Fishery will be managed prioritizing conservation and alternative value of the natural patrimony (for instance professional fishery and tourism), trying this way to generate alternative income for fishermen. These alternatives could be a condition to maintain fishery sector in Flores, which, oriented to internal market, it is not necessary to maximize [L1]. This way fishery is focused on conservation and an efficient exportation of some of the fishes [Fi2], to increase fishers' income.

> "*If must be a sustainable agriculture. Farming oriented to preservation. Do not using too intensively grounds and fertilizers. Farmers must be trained in this area so they can learn to preserve natural resources.*" Leonor M. Flores' council representative

Key investments: investments' objectives are to have a greener and sustainable island, fostering quality of life based on eco-systems value and the environment.

Population is aware of the needs of having a preserved environment and more sustainable way of life (waste management, key areas conservation, landscape conservation, sustainable agriculture, more self-sufficiency…). Investments are done considering the environmental impact (which could increase costs) and respecting the Biosphere Reserve philosophy. The example of the existing returnable yogurt pots would be generalized for the entire Island. The possible vocational school, adapted to the Island labour market size, would have as main objective to train conscious professionals on the environmental challenges. A local market creation would help to distribute local farming products [Y]. Electric energy would be produced almost 100% from renewable sources, the island model would be an example of energetic autonomy.

"*Recover some of the old houses with institutions' support and later use them for this tourism* [rural tourism]..." João-Alberto K. Restaurant owner

"*waste collection and selection. There is not. It is a service that could employ 10 to 12 people on the island and it will greatly increase environmental quality*" Daniel A. Rural tourism specialist

Health services will be developed whenever possible but betting on an efficient system of evacuation. A hospital will never make sense on the island.

"A *good network of ill people evacuation should be implemented, it is very hard to consider something better than a health centre for 4000 inhabitants*" Armando F. Representative on the island of the Regional secretary for the environment and the sea

Long term strategy: Island patrimony preservation (natural and cultural) through polities and activities that value them. For instance "*give the opportunity to young people to recover old houses instead of letting tem decaying*" [Y2]. Instead of aiming at a rapid population growth this scenario will be based on demographic stabilization and the implementation of a growth strategy that would permit a balanced and sustainable growth in the long run. The balance development scenario "*corresponds with what would be a more sustainable development*" [I1].

In 2030, Flores Island will be a paradigm of sustainable development; this might attract people that are looking for a unique way of life, *"I would like that it became a paradise, it has all the conditions for that"* [I1].

"*A place such as this one could be a paradigm for the rest of the world, it has conditions for that.*" Daniel A. Rural tourism specialist

Possible negative effects if this development model is not successful: even if this scenario, that *"considers people"* and *"that supports some aspects it will increase economic activity"* [S1], the risk is to create a green elephant in the middle of the Atlantic. The strategy might not support the demographic decreasing. The island would become a preserved but empty place, *"biodiversity is important, but if we give too much importance to biodiversity, we will turn into the green, the landscape*" [I1].

"... if it is not the case the scenario is the Island with a lighthouse keeper and groups of people that visit it, […] *it is a little bit of fiction but it is possible, 2030 or 2050… otherwise you have to stimulate people in some way*" Luca J. Rural tourism entrepreneur

13 - DATA ON THE AZORES AND FLORES ISLAND:

13.1 - Protected species in Flores' Natura 2000 sites (source: Azorean Government):

Protected species (flora)	Protected species (fauna)
Ammi trifoliatum, Arceuthobium azoricum, Chaerophyllum azoricum, Culcita macrocarpa, Euphrasia azorica, Euphorbia stygiana, Frangula azorica, Isoetes azorica, Scabiosa nitens, Trichomanes speciosum, Azorina vidalii, Erica azorica, Myosotis azorica, Picconia azorica, Spergularia azorica, Woodwardia radicans	*Oceanodroma castro, Columba palumbus* ssp. *Azorica, Calonectris diomedea* ssp. *borealis, Caretta caretta, Caretta caretta, Phocoena phocoena, Puffinus assimilis* ssp. *Baroli, Sterna dougallii, Sterna hirundo, Tursiops truncatus*

13.2 - Azorean government, areas of action[3]:

Areas of action
Human resources and quality of life
Heritage and culture
Environment and ecological equilibrium defence
Nature, natural resources, public, animal and vegetal health protection
Development of agriculture and fisheries
Water, mineral and thermal resources
Locally produced energy
Land settlement, housing policies, urbanism and land use
Land transport infrastructures
Inter-island transport infrastructures
Commercial and industrial development
Tourism, folklore and craftwork industries
Sports
Organisation of regional administration and the services that relate to it
Demography, immigration and resident status policy
Guardianship of local administrations and their territorial demarcation
Orientation, management, coordination and taxing of public services and institutions and public or nationalised companies that practice their activity in the island
Land juridical statuses and exploration, including land letting
Maritime coast line
Social health and security
Employment and professional formation
Pre-school, school and higher education
Public performances and spectacles
Expropriation of assets located in the Region
Civil engineering and social equipment
Social communication
Direct foreign investment and technology transference
Adaptation of the fiscal system to the regional economic situation
Fiscal advantages concessions
Maintaining of public order
Regional statistics

[3] Author's translation.

13.3 - Azorean secretariats:

The **Regional Secretariat of Education and Training** is responsible for the decisions concerning education and vocational training and sports. This secretariat is subdivided into two directorates, the Regional Directorate for Education and Training and the Regional Directorate for Sport and one Regional Inspectorate of Education.
The **Regional Secretariat of Science, Technology and Infrastructure** has as its main mission dealing with public works, maintenance and rehabilitation of public buildings, land transport, civil defence and fire department, communications, and science and technology, and information technology The secretariat is subdivided into two directorates, the Regional Directorate for Science, Technology and Communications and the Regional Directorate for Infrastructure and Land Transport, and three different operational bodies, the Regional Transport Fund, the Regional Civil Engineering Laboratory and the Azores Regional Civil Protection and Fire Services.
The **Regional Secretariat of Economy** manages strategic areas such as: tourism, transport by sea, air transport, trade, industry and handicraft. The Regional Directorate for the Support of Investment and Competitiveness, the Regional Directorate for Tourism and the Regional Directorate for Air and Maritime Transport are the three directorates that compose the Regional Secretariat of Economy. The Regional Cohesion Fund deals with the issues relating to the islands' effective supplies of essential goods, compensating for the effects of the geographic dispersion. Finally the Regional Centre for Handicrafts has as its main mission promotion of this sector of activity.
The **Regional Secretariat for Labour and Social Solidarity** is divided into four directorates. The Regional Directorate for Solidarity and Social Security, Regional Directorate for Employment, Vocational Training and Consumer Defence, the Regional Directorate for Equality of Opportunities and the Regional Directorate for Housing. This secretariat is also in charge of some services related to the inspection of economic activities, social work, social security and public administration training.
The **Regional Secretariat for Agriculture and Forestry** deals with the development of good agricultural and forest practices, willing to promote the region and its sustainable development. Three directorates form this secretariat: the Regional Directorate for Agricultural Development, the Regional Directorate for Community Agricultural Affairs and the Regional Directorate for Forest Resources. It is also responsible for two regional institutes, the Institute for Food and Agricultural Markets and the Regional Institute for Agrarian Ordainment.
The **Regional Secretariat for the Environment and the Sea** (SRAM in its Portuguese acronym) is in charge of protecting and managing the region's natural heritage. The Regional Government is well aware of how important the islands' natural heritage is to the external image of the archipelago, and is willing to preserve the value of this heritage for future generations, understanding the need for its recovery and protection, in order to maintain this source of well being. The Regional Undersecretariat of Fisheries, the Regional Directorate for the Environment, the Regional Inspectorate for the Environment, the Regional Directorate for Energy and the Regional Directorate for Sea Affairs are the directorates and services that make up this secretariat.
The **Regional Secretariat for Health** is composed of two main directorates, the Regional Directorate for Health and the Regional Directorate for Prevention and Combat to the Dependences.

13.4 - Azorean development strategic factors (source: *PROTA* Volume 1)[4]

1	Institutional recognition
2	Value of the ultra periphery
3	Tendency to demographic stabilisation
4	Potential growth of workforce
5	Existence of a national or European framework that favours human resources qualification and development of labour market
6	Innovation policies, scientific development and use of information and new communication technologies
7	Development of scientific and technical potential associated with the use of renewable energy and the modernisation of energy infrastructures
8	Modernisation of communication technologies
9	Modernisation of transport infrastructures
10	Intensification of the frequency of air and sea transports
11	Sustainability of the transport system
12	Diversification of traditional economic activities
13	Development of regional tourism potential
14	Support of tourist activities that preserve the ecosystem
15	Taking advantage of new opportunities that enhance diversification of accesses, fighting against territorial fragmentation and ultra periphery
16	Diversify economic activity related to tourism
17	Sustainable urban settlement
18	Fight rural desertion
19	Raising awareness amongst the local people about conservation of natural assets (biological, geological and landscape)
20	Effective territorial management plans
21	Increase importance of regional research at an international level

13.5 - Azorean regional plans

Regional Water Plan (*Plano Regional da Água*, PRA) 2001
Program for the Environmental Recovery of the Volcanic Lakes (*Programa Operacional de Recuperação Ambiental das Lagoas*, PORAL)
Management Plans of the Protected Areas (*Planos de Gestão de Áreas Protegidas*)
Managements Plans of Marine Areas (*Planos de Gestão de Áras Marinhas*)[5]
Management Plans of the Hydrographical Basins of the Volcanic Lakes (*Planos de Ordenamento da Bacia Hidrográfica de Lagoas*, POBHL)[6]
Coast Line Management Plan (*Planos de Ordenamento da Orla Costeira*, POOC) Diário da Repblica, 2008
Rural Development Plan (*Plano de Desenvolvimento Rural para a Região Autónoma dos Açores*) (SRAF, 2007)
Innovative Actions for the Autonomous Region of the Azores (*Acções Inovadoras para a Região Autónoma dos Açores*, PRAI Açores)[7]
Strategic plans for Urban, Industrial and Clinical Wastes (PERSUA, PERIEA and PERHA)
Regional Employment Plan (*Plano Regional de Emprego para os Açores*) 2010-2015
Regional Health Plan (*Plano Regional de Saúde*) 2009
Operational Plan for Marketing in Tourism (*Plano Operacional de Marketing para o Turismo da Região Autónoma dos Açores*)

[4] My translation
[5] http://www.horta.uac.pt/projectos/macmar/ogamp/ogamp_zones.html
[6] http://pobhlflores.drupalgardens.com/
[7] http://www.azores.gov.pt/Portal/pt/entidades/vp-drpfe/textoImagem/prai+acores.htm

13.6 - Regional System of Sustainable Development Indicators[8]

THEMES	SUB-THEMES	INDICATORS
Atmosphere	Climate alterations	Greenhouse gas emissions
	Air quality	Concentration of atmospheric contaminants in urban areas
Land settlement	Utilisation	Land utilisation (% of forest area)
	Land settlement	Councils with *Director Municipal Plan* (%)
		Coast with management plan
Water	Quantity	Water utilisation intensity (%)
	Quality	Superficial water quality
		Subterranean water quality (%)
		Coastal water quality (%)
	Utilisation and services	Needs by type of utilization (m^3*$inhab^{-1}$)
		Population provided with quality water (%)
		Population provided with sewer systems and adequate waste water cleaning systems (%)
Biodiversity	Species	Endangered and protected species
	Ecosystems	Protected and classified areas (%)
Waste	Production	Production of urban solid waste (kg*$inhab^{-1}$*day^{-1})
		Production of industrial waste (% industrial waste)
	Management	Selective collecting and waste recycling (% of urban solid waste)
Macroeconomic	Economic results	GDP per capita (%)
		Gross Value Added
		Trade balance
	Enterprises dynamics	Enterprises growth rate (%)
Economic sectors	Agriculture	Agricultural area (%)
		Agrochemical utilisation (kg*ha^{-1} of agricultural area)
		Organic production (ha)
		Cattle (Normal Cattle*$inhab^{-1}$)
Economic sectors	Fishery	Intensity of exploration of fishery resources (kg*$inhab^{-1}$)
	Tourism	Accommodation capacity (places*10^{-3}*$inhab^{-1}$)
		Touristic intensity (no nights*$inhab^{-1}$)
	Energy	Per head electric consumption (kWh*$inhab^{-1}$)
		Electric production from renewal energies (%)
		Energy intensity (TEP*10^{-3}*$Euro^{-1}$ of GDP)
	Industry	Industrial production
	Transports	Public transports utilisation (inhab*km^{-1}*$year^{-1}$)
		Motorisation rate (nº vehicles*10^{-3}*$inhab^{-1}$)
Population	Demographic structure	Population density (inhab*km^{-2})
		Ageing rate (%)
		Dependency rate (%)
	Population dynamic	Population growth rate (%)
	Employment	Unemployment rate (%)
		Employment by activity sectors
	Equity	Wage fairness rate by gender (%)
Health	Mortality	Infant mortality rate (‰)
		Average life expectancy (years)
	Medical care	Vaccination rate amongst the children
		Population rate by medical care services (inhab*bed^{-1})
Education	Education	Population with secondary school completed (%)
		Illiteracy rate (%)
		Pupils per teacher rate

[8] Author's translation.

		(n^o pupils*teacher^{-1})
Culture	Cultural infrastructure	Cultural infrastructure rate (10^3*inhab*cultural inf.$^{-1}$)
Housing	Housing conditions	Characterisation (people living in poor housing conditions) (%)
Security	Criminality	Criminality rate (n^o crimes*10^{-3}*inhab^{-1})
Local and institutional management	Certification	Certified entities
	Local sustainable development	Implementation of Local 21 Agendas
Information and participation society	Communication infrastructures	Press
		Internet accessibility rate (%)
	Public participation	Electoral Absenteeism (%)
Expenses and investment	Environmental quality	Public financing for environment quality
	Agriculture	Public financing for agriculture development
	Fishery	Public financing for fisheries development
	Tourism	Public financing for tourism development
	Energy	Public financing for energy sector
	Transport	Public financing for transport sector
	Health	Public financing for health care
	Education	Public financing for the education system
	Social Security (welfare)	Public financing for social security
	Sciences and technology	Public financing for Research and Development
Risks protection	Civil protection	Human and material losses due to natural disasters
		Emergency plans (%)

14 - CRITERIA WEIGHTS WITHOUT NORMALIZATION:

Figure A14.1: Weights for issues, considering only core and discretionary criteria (light green: maximum and minimum weights given to any criterion within the group of issue, dark green: average maximum and minimum weights given to any core and discretionary criterion within the group of issue). Red lines: average criteria weight per issue (the average score for core and discretionary criteria was 73).

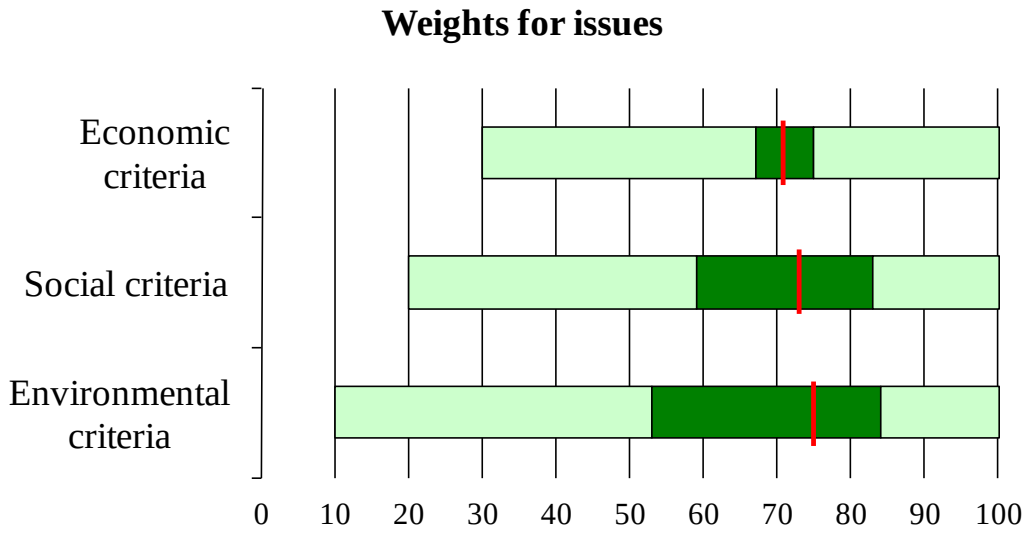
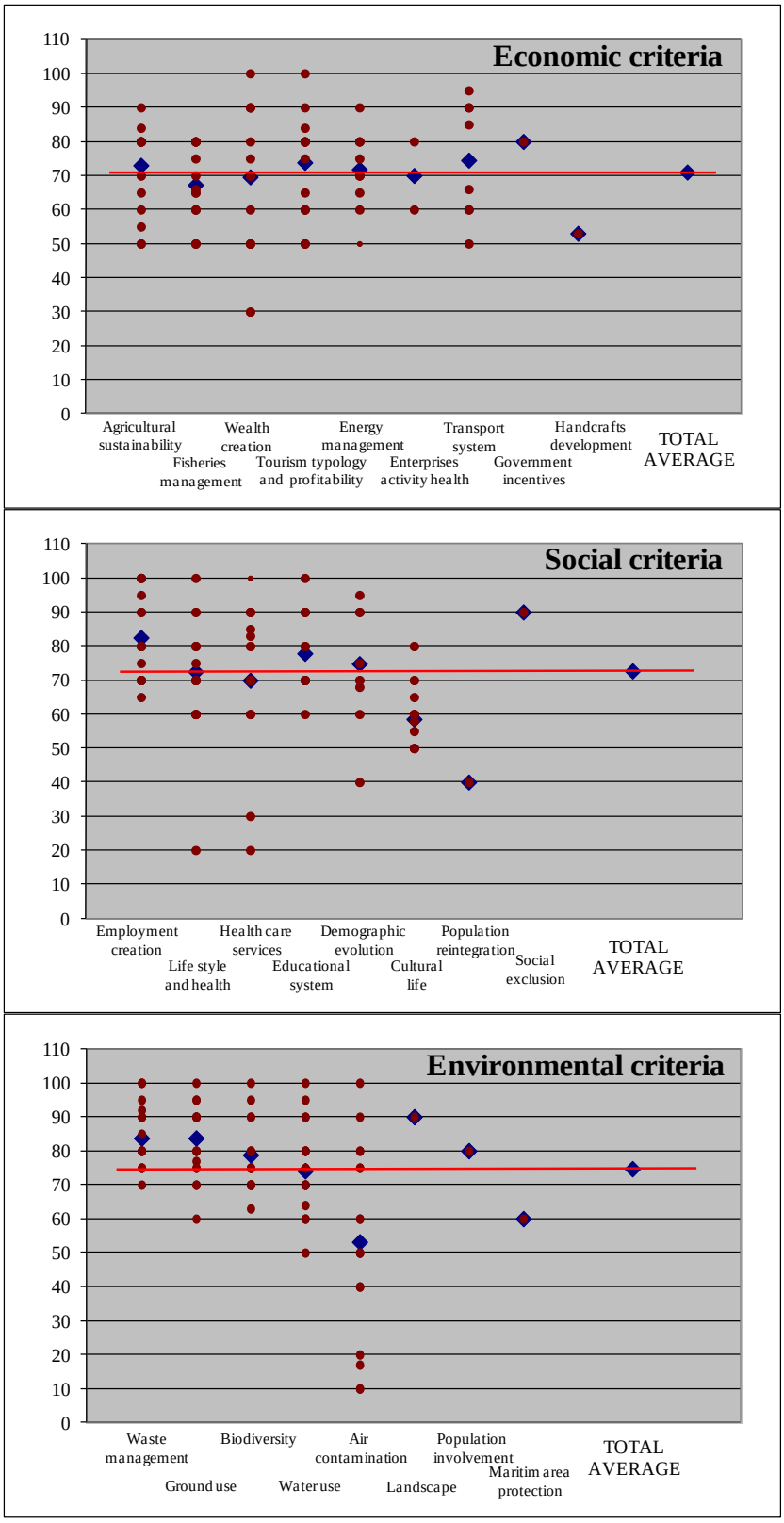


Figure A14.2: Criteria weights given by interviewees to each criterion and average weight (considering only core and discretionary criteria) (blue lozenge: average weight per criterion; red point: individual criteria weights).



15 - PARALLEL PROJECTS' ACTIVITY: INFORMING TRANSITIONS TO SUSTAINABILITY:

15.1 - Purposes: additional information gathering, information sharing and facilitation

The core of the present research project revolves around the notions of desired sustainable futures, a reflexive participatory scenario building and an appraisal methodology labelled 'Participative foresight scenario mapping'. But the foresight scenario building could turn out to be an abstract exercise that might have not informed Flores Island's development realistically or that lacked the information necessary to inform this transition. The foresight exercise was positive because it enabled the research participants to stand back from the present situation, easing the practice of Rossi's "civic-virtue" as participants were less inclined to solely defend their interests, because the time horizon allowed them to be less subjective or arbitrary. However, this could lead the analysis into too indefinite, unrealistic or impractical grounds. In order to inform potential realistic actions that could be undertaken in a shorter term and to inform the actions that would enable the transitions to the desired future, the participants were asked in each step of the research project to reflect and propose projects for the island[9]. In addition to the objective of providing concrete information on feasible projects the other functional aim of these activities was to foster information sharing among participants. Focus group participants got to know the projects proposed by the stakeholders in the scoping interviews, fostering a 'top-to-base' flow of information. In return the projects proposed by the lay citizens were presented to the stakeholders in the multi-criteria appraisal interviews, fostering 'base-to-top' flow of information. Thus information was clearly following a circular dialectic pattern, and the different categories of participants could learn from each other.

These exercises with the potential projects had also a facilitation objective. In the focus groups and multi-criteria appraisal interviews the activity with the projects was realized at the beginning to warm-up, it was the opportunity to discuss these points in groups, implying that the interviewees had to have an active role in the meetings. Participants needed to start thinking about long time horizons and how

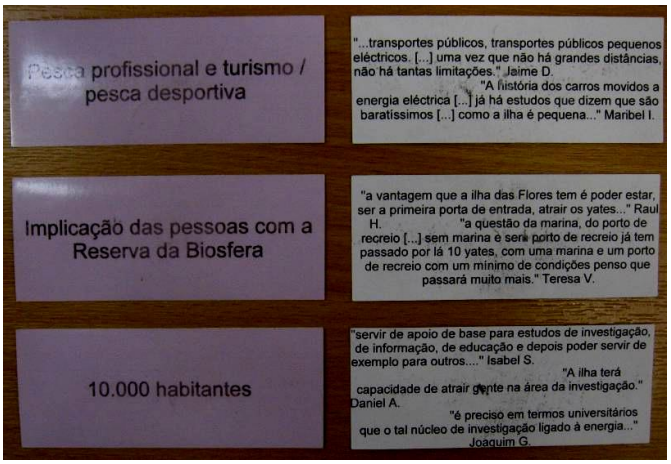
[9] Indeed I used some of the proposed projects to illustrate the draft and final scenarios.

the island could be in 2030 before discussing the draft scenarios; this being an opportunity to prepare their minds for the appraisal of future scenarios. In the case of the MCM interviews, working on the projects reminded the interviewees of the scenarios so that they could start building a personal judgment of them.

15.2 - Projects for the island's development

In the semi-structured scoping interviews, stakeholders were asked to propose projects or policies for the island. In addition to these, an analysis of the interviews allowed me to extract additional projects or policies for Flores Island. Seventy seven projects were identified in the scoping interviews, from which a shortlist of 35 projects was selected (Table A15.1, which also presents in italic the projects proposed in the focus groups[10]). A wide range of fields of activity including: agriculture, society (culture and education), tourism, environment, energies, fisheries, infrastructures, transport and entrepreneurship, were mentioned. The selected projects were printed on cards (Figure A15.1) later used in the focus groups. In order to inform the projects with direct explanations from the stakeholders the other side of the cards showed short quotes from the scoping interviews concerning the projects.

Figure A15.1: Example of project cards, odd and even sides



"*Professional fishing and tourism projects*"

"*Population involved with UNESCO Biosphere Reserve*"

"*10,000 inhabitants*"

[10] The groups that proposed the different projects are presented in brackets.

Table A15.1: Project for Flores Island proposed by stakeholders in the scoping interviews (sorted by fields of activity)

Agriculture	**Infrastructures and transports**
Organic agriculture	Renewable energies (increase)
Agriculture for local consumption	Infrastructures' development
Tropical fruit production (develop the production of exotic fruits with added value)	Air taxi (small local company for air transport)
Quality primary sector (Y.A.)	Upgrade the airport and port
Meat and fish storage and conditioning project (To.)	Improve health care services
Tourism	Improve telecommunications
Nature sport chart for the island	Electric vehicles
Rural tourism (increase)	Lajes das Flores' marina
Pedestrian network (increase)	*Elimination of transports' monopoly (To.)*
Higher standards in catering services (better quality restaurants)	*Transports (Y.A.)*
Youth hostel	*Industrial estate in Vales (SC das Flores) (Fi.)*
Professional fishing and tourism projects	*Industrial estate in Lajes das Flores (L.)*
Active tourism enterprises	**Industry/handcraft**
Eco-museum	Leather products (from cows)
No mass tourism (Y.A.)	Promote handcraft
Gastronomy (fish/jam) (Y.A.)	*Conteira* (invasive plant) derivative products
Ecologic camp site (Y.A.)	*Bottled water company (To.)*
Advert the island resources (Y.A.)	*Study spring water and Conteira potentialities (Far.)*
Outdoor sports enterprise (L.)	**Social**
Environment	10,000 inhabitants (strong demographic growth)
Nature conservation	Youth support centre
Population involved with UNESCO Biosphere Reserve	Vocational training school
Traditional buildings recovery	University investigation centre
Biosphere Reserve certification	Environmental education
Close open waste dumps	*Improve school transports (To.)*
Pay for water	*Regional Directorate of Fisheries (headquarter) (Pr.)*
Sustainable waste management (To.)	*Arts academy (S.)*
Involve people in their quality of life and the island issues (S.)	*Library (S.)*
Fishing	*Theatre (S.)*
Fisheries management	In italic are presented the projects proposed in the focus groups (*Y.A.*: young adults; *Fi.*: fishermen; *Pr.*: producers; *To.*: tourism; *Far.*: farmers; *L.*: Lajes das Flores; *S.*: Santa Cruz das Flores)
Fishing control (increase)	
"Goraz quota" (improve fishery sector) (Fi.)	
Flores fisheries museum (Fi.)	
Upgrade St Cruz port (Fi.)	
Improve fish exportation (Fi.)	

In focus groups participants were given the 35 cards which they were asked to place in a two axes graph following two aspects: their feasibility (would they be done or not before 2030) and their impact on the island (are the projects relevant, irrelevant or adverse for the island). Figure 5.3 illustrates the exercise, and Table A15.2 summarises how the projects were mapped by participants[11]. In order to present this data, project received a code (Figure A15.2) so the reader can track (with relative accuracy) where each project was mapped in the focus group interviews[12]. Participants showed interest in that activity, actively participating in it, and taking the opportunity to express their points of view on the projects. In addition to mapping the projects the participants were asked to propose projects for the island. Each group mapped their own proposed projects and the projects proposed by other focus groups. A total of 24 projects, later used in the MCM interviews, were identified in the focus groups (Table A15.1). Finally, in the appraisal step, the MCM interviews started with a backcasting exercise on the projects proposed in the focus groups. In this activity the interviewees were asked to decide if the 24 projects proposed by the lay citizens fitted better in the Standard or the Balanced development scenarios. While they were identifying possible associations between the projects and the scenarios, they were informing the transitions towards these visions. Table A15.3 shows how the projects were sorted between the two scenarios.

[11] Table A11.1 follows the same code as Figure 5.10 (see footnote 129).
[12] For the projects that where on the axis the letters of the two 'regions' are written.

Figure A15.2: Focus groups' projects activity scheme and coding[13], and example of map

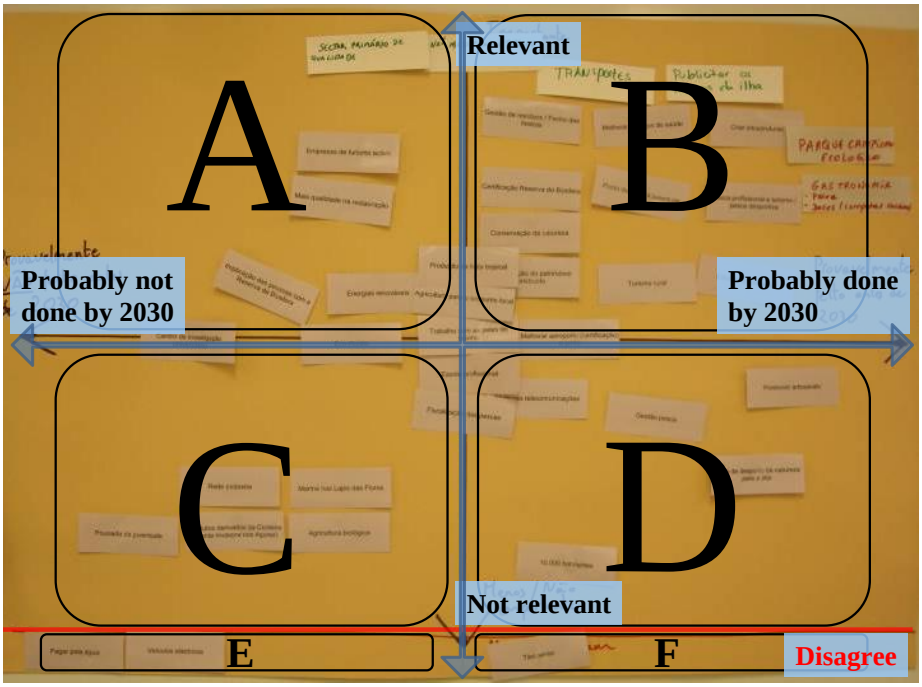


Table A15.2: Summary table of focus groups' projects' activity

	Projects	Young adults	Fishermen	Producer	Tourism	Farmers	Lajes das Flores	Santa Cruz das Flores
1	**10,000 inhabitants**	D	A	A	C	A	E	*D*
2	**Organic agriculture**	C	A	A	B	B	B	B
3	**Agriculture for local consumption**	*AB*	B	A	B	A	A	B
4	**Nature sport chart for the island**	D	B	D	D	B	B	B
5	**University investigation centre**	AC	B	A	C	A	C	B
6	**Biosphere Reserve certification**	B	B	B	B	B	B	BC
7	**Nature conservation**	B	B	B	B	B	B	B
8	**Infrastructures' development**	B	B	B	B	B	A	D
9	**Eco-museum**	AC	AB	A	C	B	AC	B
10	**Environmental education**	B	B	B	B	B	B	B
11	**Active tourism enterprises**	A	B	A	B	B	B	B
12	**Renewable energies (increase)**	A	B	B	C	B	B	B

[13] The letters showed in the table correspond to how the projects were mapped and use the same code as in Figure 5.10. The letters A, B, C, D, E and F correspond to each plot of the graph. 'A' means that the project is relevant/important but will not be done; 'B' that the project is relevant and will be done; 'C' the project is not relevant and will not be done; 'D' the project is not relevant but will be done; 'E' the project is considered negative and will not be done and finally 'F' the project is considered negative for the island but it will probably be implemented. Two letters were used to reflect that some participants placed the cards on an axes (for instance between A and B plots), in that case (AB) they were meaning that the project is relevant but that they could not tell it was going to be undertaken or not.

13	**Vocational training school**	CD	B	AB	B	B	B	B
14	**Close open sky dumping grounds**	B	B	B	B	B	B	B
15	**Fishing control (increase)**	CD	B	A	D	B	AB	B
16	**Fishery management**	D	B	A	B	B	B	B
17	**Population implicated with UNESCO BR**	A	D	A	B	AB	A	B
18	**Higher standards in catering services (restaurants)**	A	B	A	B	B	B	B
19	**Lajes das Flores' marina**	C	D	D	D	B	B	B
20	**Upgrade the airport and port**	BD	A	B	B	B	B	D
21	**Improve health care services**	B	A	A	B	B	A	B
22	**Improve telecommunications**	D	B	B	B	B	B	B
23	**Pay for water**	E	F	D	D	F	F	B
24	**Professional fishing and tourism projects**	B	B	B	B	B	B	B
25	**Youth support center**	B	B	B	D	B	A	B
26	**Youth hostel**	C	D	A	D	B	B	B
27	**Tropical fruit production**	AB	B	A	C	B	D	B
28	***Conteira* (invasive plant) derivative products**	C	D	B	C	D	C	B
29	**Promote handcraft**	D	B	AB	B	BD	B	B
30	**Traditional buildings recovery**	B	D	AB	D	BD	B	B
31	**Pedestrian network (increase)**	C	D	B	B	B	B	B
32	**Air taxi**	F	B	D	C	B	C	CD
33	**Leather products (from cows)**	ABCD	D	B	D	B	C	ABCD
34	**Rural tourism (increase)**	B	B	B	D	B	B	B
35	**Electric vehicles**	E	D	B	C	D	A	B
Proposed in the focus groups:								
36	**No mass tourism (Y.A.)**	AB	D	D	B	A	B	B
37	**Gastronomy (fish/jam) (Y.A.)**	B	B	AB	B	B	A	B
38	**Ecologic camp site (Y.A.)**	B	B	AB	A	B	B	B
39	**Transports (Y.A.)**	B	B	AB	A	B	AB	BD
40	**Advert the island resources (Y.A.)**	B	AB	D	A	B	A	B
41	**Quality primary sector (Y.A.)**	A	B	B	A	BD	AB	B
42	**"Goraz quota" (improve fishery sector) (Fi.)**		B	B	A	BD	A	B
43	**Industrial estate in Vales (SC das Flores) (Fi.)**		B	B	A	B	AB	F
44	**Flores fisheries museum (Fi.)**		A	B	B	B	B	B
45	**Upgrade St Cruz port (Fi.)**		A	B	C	A	AB	B
46	**Improve fish exportation (Fi.)**		B	D	C	B	A	B
47	**Regional Directorate of Fisheries (headquarter) (Pr.)**			A	C	A	A	AB
48	**Bottled water company (To.)**				AB	B	A	BD
49	**Elimination of transports monopoly (To.)**				AB	A	A	B

50	**Improve school transports (To.)**				B	B	ABC	B
51	**Meat and fish storage and conditioning project (To.)**				B	B	B	BD
52	**Sustainable waste management (To.)**				B	B	B	B
53	**Study spring water and *Conteira* potentialities (Far.)**					B	A	B
54	**Industrial estate in Lajes das Flores (L.)**						BD	B
55	**Outdoor sports enterprise (L.)**						AB	B
56	**Arts academy (S.)**							A
57	**Library (S.)**							B
58	**Involve people in their quality of life and the island issues (S.)**							B
59	**Theatre (S.)**							B

A: Relevant, will not be done; B: Relevant, will be done
C: Not relevant, will not be done; D: Not relevant, will be done
E: Negative, will not be done; F: Negative, will be done

Table A15.3: MCA projects' activity, results

SDS	BDS	Indif.	Projects
15,8%	78,9%	5,3%	No mass tourism (Y.A.)
26,3%	57,9%	15,8%	Gastronomy (fish/jam) (Y.A.)
10,5%	89,5%	0,0%	Ecologic camp site (Y.A.)
52,6%	15,8%	31,6%	Transports (Y.A.)
26,3%	47,4%	26,3%	Advert the island resources (Y.A.)
31,6%	68,4%	0,0%	Quality primary sector (Y.A.)
68,4%	21,1%	10,5%	"Goraz quota" (improve fishery sector) (Fi.)
57,9%	26,3%	15,8%	Industrial estate in Vales (SC das Flores) (Fi.)
5,3%	57,9%	36,8%	Flores fisheries museum (Fi.)
78,9%	5,3%	15,8%	Upgrade St Cruz port (Fi.)
63,2%	15,8%	21,1%	Improve fish exportation (Fi.)
15,8%	42,1%	42,1%	Regional Directorate of Fisheries (headquarter) (Pr.)
21,1%	47,4%	31,6%	Bottled water company (To.)
36,8%	21,1%	42,1%	Elimination of transports monopoly (To.)
36,8%	15,8%	47,4%	Improve school transports (To.)
57,9%	26,3%	15,8%	Meat and fish storage and conditioning project (To.)
21,1%	63,2%	15,8%	Sustainable waste management (To.)
21,1%	52,6%	26,3%	Study spring water and *Conteira* potentialities (Far.)
57,9%	10,5%	31,6%	Industrial estate in Lajes das Flores (L.)
10,5%	84,2%	5,3%	Outdoor sports enterprise (L.)
15,8%	42,1%	42,1%	Arts academy (S.)
21,1%	31,6%	47,4%	Library (S.)
15,8%	68,4%	15,8%	Involve people in their quality of life and the island issues (S.)
26,3%	36,8%	36,8%	Theatre (S.)

Y.A.: young adults; Fi.: fishermen; Pr.: producers; To.: tourism; Far.: farmers;
L.: Lajes das Flores; S.: Santa Cruz das Flores

16 - DISSEMATION WORKSHOP – SUPPORT MATERIAL:

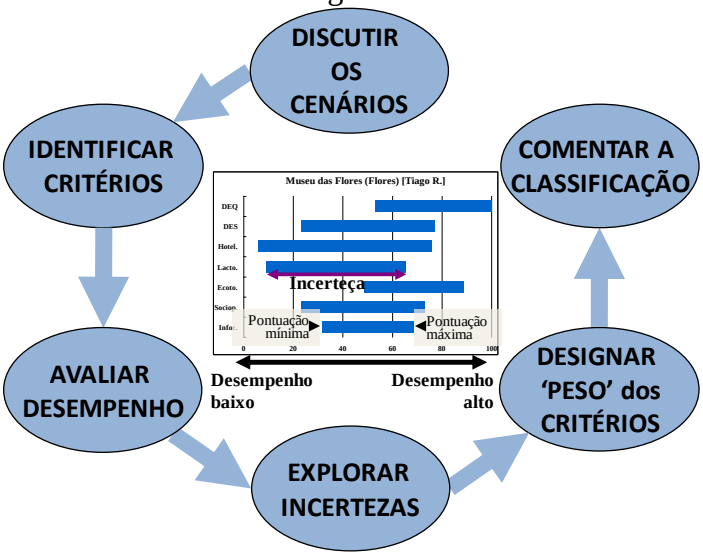
Information as presented in a booklet given to the participants to the dissemination workshop. This includes a summary of the methodology, the headlines of the scenarios and the criteria used in the appraisal, and quantitative appraisal graphs.

FLORES, VISÕES DE FUTURO E DESENVOLVIMENTO SUSTENTÁVEL - **2030**

Avaliação multi-critério dos cenários de desenvolvimento:

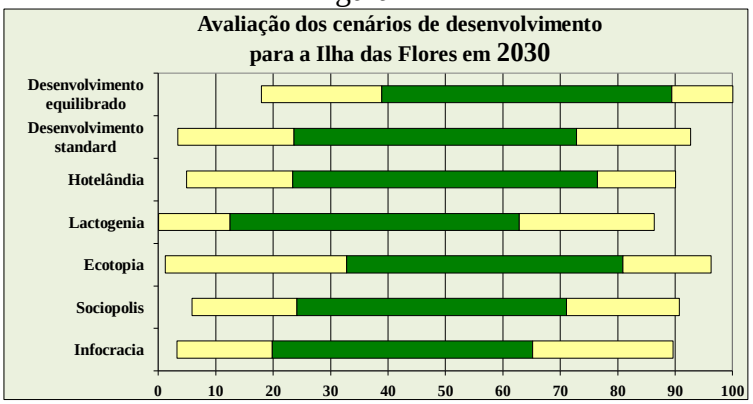
As entrevistas de avaliação multi-critério realizadas aos agentes sociais (Figura 1 para breve apresentação da metodologia) permitiram perceber as suas perspectivas sobre o desenvolvimento das Flores. A análise dos dados permitiu apresentar um gráfico resumo (Figura 2), que sintetiza os pontos de vista dos entrevistados, em relação aos cenários (Figura 4 para os gráficos individuais, os entrevistados são identificados por pseudónimos). Dos dois cenários identificados para a Ilha das Flores, em 2030, (Desenvolvimento Equilibrado e Desenvolvimento Standard) o cenário que apresenta um sucesso maior é o do **Desenvolvimento Equilibrado**. Este cenário apresenta também a nota mínima mais alta, o que significa que, no pior dos casos, seria menos negativo que o cenário de Desenvolvimento Standard. Os cenários e os critérios utilizados na avaliação são apresentados na Página 2, do presente documento.

Figura 1



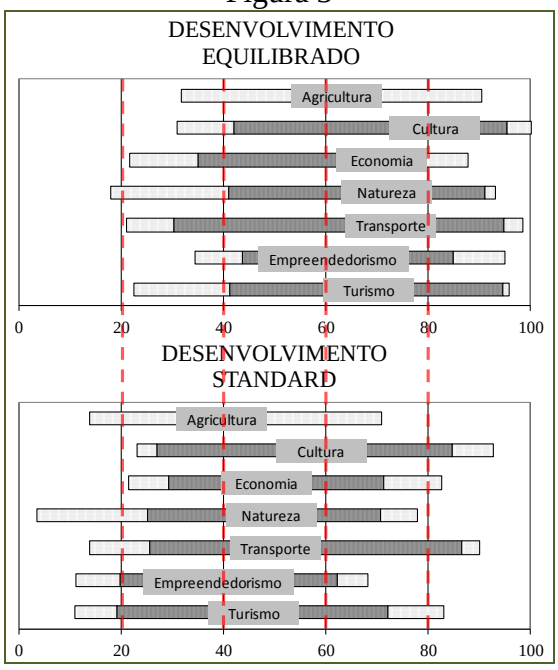
Em relação aos cenários institucionais do *PReDSA*, estes foram considerados irrealistas pelos participantes já que são demasiado específicos. Os mais valorizados foram o *Ecotopia* (baseado no património natural) e o *Hotelândia* (desenvolvimento turístico). Os cenários *Sociopolis* (factores sociais) e *Infocracia* (sociedade da informação) apresentam uma valorização menor. O cenário da *Lactogenia*, baseado no desenvolvimento da agro-pecuária, parece ser o menos interessante para a ilha e o que seria potencialmente mais negativo.

Figura 2



Para além de combinar a totalidade dos dados das entrevistas individuais (Figura 2) estes foram também combinados pela área de actividade profissional dos entrevistados (Figura 3, onde se observa uma preferência pelo Desenvolvimento Equilibrado comparativamente ao Standard, em as categorias profissionais), a localidade, o estatudo profissional e o género (Figura 5). Estes gráficos mostram uma convergência dos pontos de vista independentemente da localidade e do estatuto profissional, é interessante ver que o género do entrevistado parece condicionar a avaliação dos cenários (as mulheres entrevistadas mostraram mais pessimismo e menor incerteza).

Figura 3



Os cenários associados com menor incerteza (ou risco) foram o do Desenvolvimento Equilibrado e a *Ectopia* (Figura 6). Os cenários do Desenvolvimento Standard, o *Hotelândia* e o *Lactogenia* foram os que tiveram maior incerteza associada.

Critérios utilizados na avaliação dos cenários:

Critérios Económicos:
- Sustentabilidade agro-pecuária
- Gestão da pesca e a sua sustentabilidade
- Riqueza produzida
- Tipologia e rentabilidade do turismo
- Gestão da energia
- Saúde da actividade empresarial
- Sustentabilidade e conveniência do sistema de transporte
- Incentivos governamentais
- Desenvolvimento artesanal

Critérios Sociais:
- Criação de emprego
- Estilo de vida e saúde
- Situação dos cuidados médicos
- Vida cultural e cultura
- Sistema educativo da ilha
- Dinâmica populacional (demografia)
- Reintegração da população
- Exclusão social

Critérios ambientais:
- Gestão dos resíduos
- Uso sustentável do solo e dos recursos do território
- Biodiversidade
- Utilização adequada da água
- Contaminação atmosférica produzida na ilha
- Paisagem
- Envolvimento da população
- Protecção da área marinha

O Cenário do DESENVOLVIMENTO STANDARD consiste no desenvolvimento através do investimento público em infraestruturas, apostando num sector primário mais intensivo que vai permitir exportar alguns produtos agrícolas (carne de bovino, leite e produtos derivados do leite), num modelo de turismo mais estandardizado (apostando nas oportunidades da ilha mas não priorizando o impacto ambiental mínimo) e na exploração da água com fins comerciais. Em certos aspectos este já é o caminho que se está a seguir, mesmo que o cenário crie certa "apreensão". Sobretudo o papel da agricultura "produzir mais e mais, isto também é um pouco agressivo". Mas a ilha precisa de investimento público e este parece um cenário que permite criar mais riquezas, "o que a gente quer é mais riquezas" e nem todos os investimentos em infraestruturas deveriam de ter um forte impacto no ambiente, "as pessoas estão muito mais sensibilizadas com as questões ambientais". Algumas pessoas afirmam que a ilha já tomou este rumo, certas infraestruturas já criadas estão infra-utilizadas, afirmações como: "nos já temos um elefante branco" e "as coisas das Flores são feitas fora de sítio" levam a pensar isto.

O Cenário do DESENVOLVIMENTO EQUILIBRADO consiste num cenário de altos standards de qualidade ambiental e valorização dos valores próprios associados à própria natureza e vivência da Ilha, apostando, por exemplo, fortemente no estatuto da Reserva da Biosfera. Neste cenário, "agradecido com o ambiente", são fundamentais investimentos prudentes e infra-estruturas que pretendam valorizar a ilha pensando no turismo mas, sobretudo, nos seus habitantes, e que priorizam o impacto ambiental mais baixo, assim como a preservação, melhoramento e valorização dos eco-serviços e redução da dependência exterior, "é bom fazer alguma coisa para não estar dependentes do exterior" (nomeadamente ao nível das importações). Este cenário, "tal vez utópico", vai precisar de investimentos que se calhar a ilha não tem, mas, em geral, tem sido considerado melhor para a ilha, algumas pessoas acham que a ilha está bem encaminhada para este cenário. Mesmo que se promova um cenário assim, que "tem em conta as pessoas" e "ao promover estas coisas vai dar muita mais actividade e por isso, isto [desertificação] dificilmente acontece", o risco é criar um elefante verde no meio do Atlântico.

Cenários do estudo de base do PReDSA:

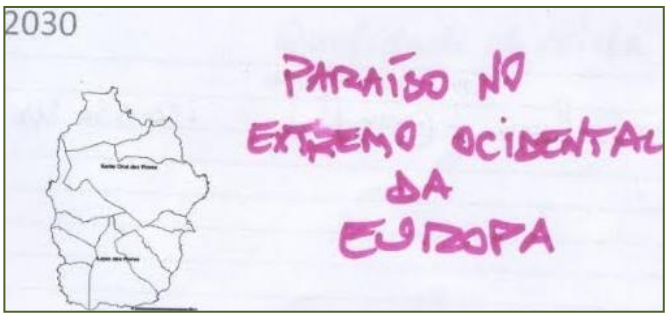
***HOTELÂNDIA*:** baseado no desenvolvimento turístico com quatro forças motrizes – a qualidade dos produtos regionais, a qualidade do património natural, a diferenciação do património cultural e os transportes aéreos e marítimos.

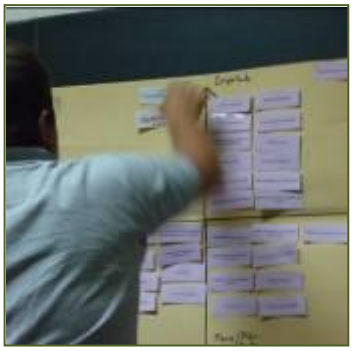
***LACTOGENIA*:** baseado na excelência do desenvolvimento agro-pecuário com as forças motrizes da qualidade dos produtos regionais, do potencial agro-pecuário, dos subsídios e políticas da U nião Europeia.

***ECOTOPIA*:** baseado na defesa e valorização do património natural com as forças motrizes dos recursos geotérmicos, da qualidade do património natural, da pressão sobre os recursos naturais e dos riscos geológicos e tectónicos.

***SOCIOPÓLIS*:** baseado na valorização da coesão social com as forças motrizes da população jovem, das ajudas da União Europeia, da educação.

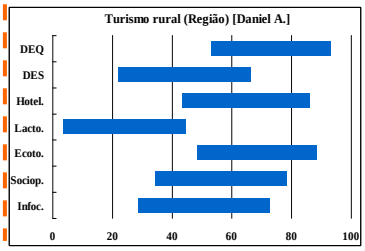
***INFOCRACIA*:** baseado na aposta da sociedade da informação com as forças motrizes da posição geo-estratégica, da população jovem, da diáspora açoriana e da ultraperifericidade.

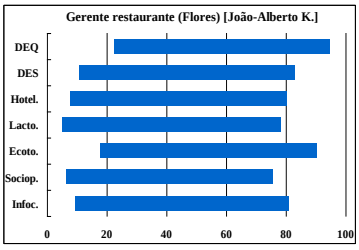


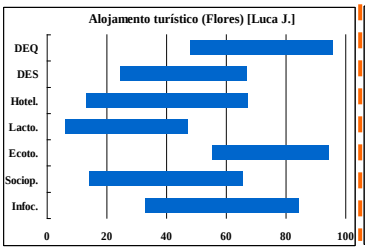


Gráficos individuais (Figura 4):

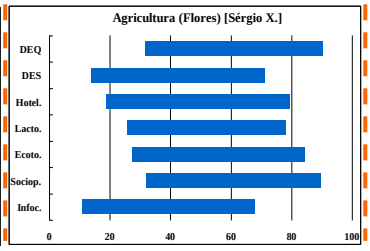
Turismo (3):



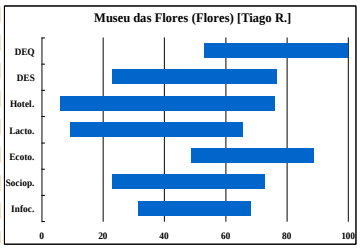


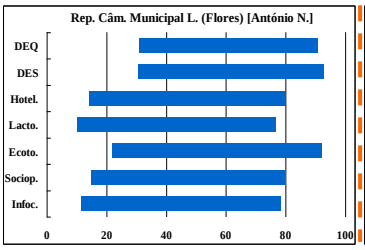


Agricultura (1):

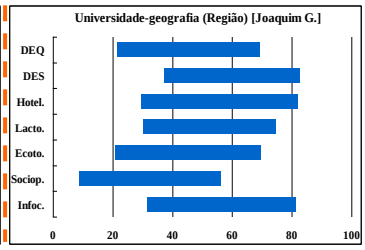


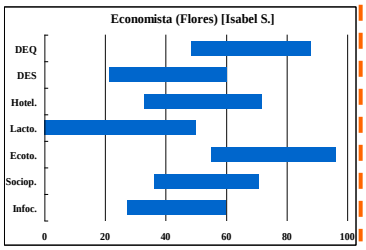
Cultura (2):



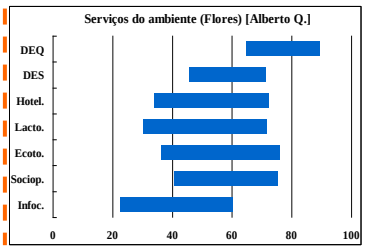


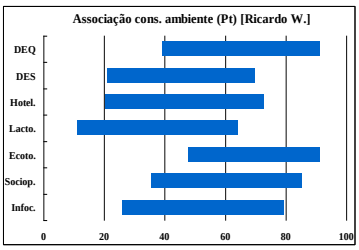
Economia (2):

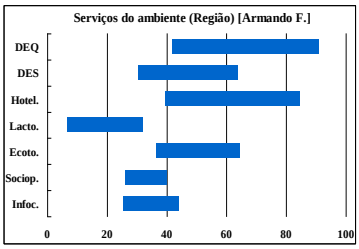


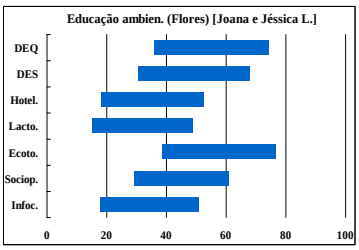


Ambiente (5):

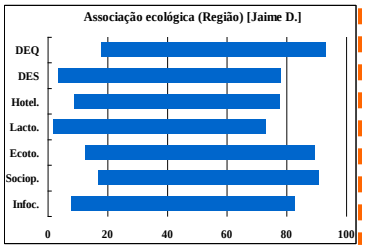


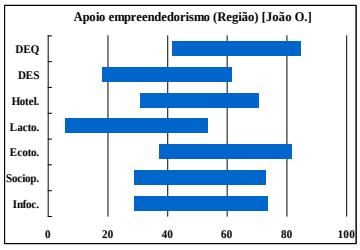


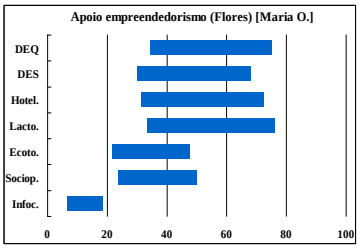


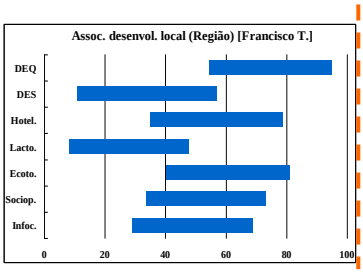


Empreendedorismo (3):

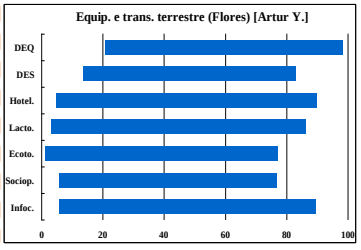


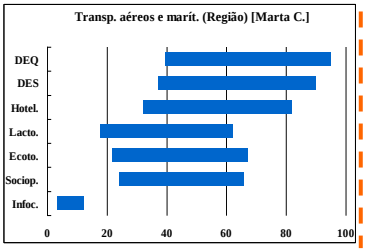






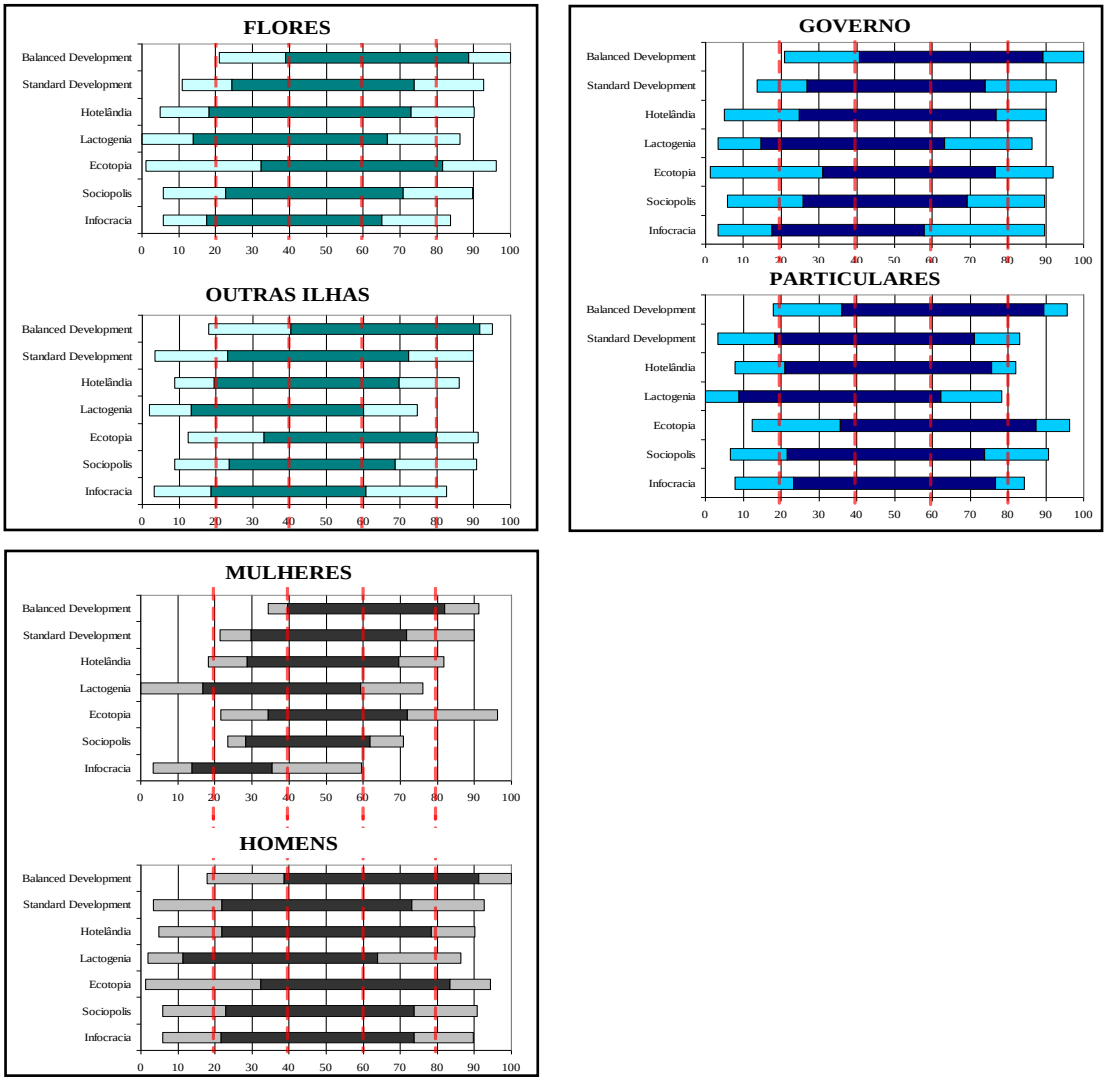
Transporte e infra-estruturas (2):





Cenários:
DEQ: Desenvolvimento Equilibrado
DES: Desenvolvimento Standard
Hotel.: *Hotelândia*
Lacto.: *Lactogenia*
Ecoto.: *Ecotopia*
Sociop.: *Sociopolis*
Infoc.: *Infocracia*

Avaliação dos cenários segundo a localidade, o estatuto profissional e o género (Figura 5):



Incerteza associada aos cenários (Figura 6):

A incerteza é a diferença entre a pontuação máxima e mínima dada, para cada cenário e cada critério, estas figuras representam a média geral da incerteza e a média segundo os critérios económicos, sociais e ambientais. Os cenários com menor incerteza associada são o Desenvolvimento Equilibrado e o *Ecotopia*. O cenário com maior risco associado tem é o *Lactogenia* (em todos os tipos de critérios: os económicos, os sociais e os ambientais).